

SOUTH AUSTRALIA

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# ANNUAL REPORT

OF THE

# Department of Public Health

AND THE

# Central Board of Health

FOR THE

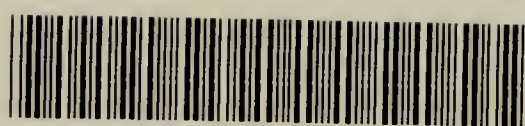
Year ended 31st December, 1967

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# THE PUBLIC HEALTH

Annual Report of the Department of Public Health and the Central Board of Health to the Minister of Health (Hon. Renfrey Curgenven DeGaris, M.L.C.)

Sir—We have the honour to submit the report for the Department of Public Health and the Central Board of Health for the year ended 31st December, 1967.

The report is divided into the following sections:—

1. Staff and Administration.
2. General.
3. Environmental Health and Food and Drugs.
4. Occupational Health and Air Pollution.
5. School Health.
6. Epidemiology.
7. Tuberculosis.
8. Summary and Comments.

Section 2-7 deal with the activities of branches of the Department and have been prepared by the respective officers in charge.

## 1. STAFF AND ADMINISTRATION

*Personnel of the Board*—During the year the members of the Board were:—

Chairman—Philip Scott Woodruff, M.D., B.S., D.T.M. & H., F.R.A.C.P.

Members appointed by the Governor—

Sir John Cleland, C.B.E., M.D., Ch.M., F.R.A.C.P.

George Hugh McQueen, M.B., B.S., D.P.H., D.T.M., F.R.S.H., F.R.S.T.M. & H.

Members elected by the metropolitan local boards—

Charles John Henry Williamson, J.P. (until 1st March, 1967)

Clement Colman (from 1st March, 1967)

Member elected by other local boards—

Alfred Bertram Cox, J.P., F.A.S.A., F.C.I.S.

Secretary—

Robert William Laver, A.U.A.

*Staff of the Department*—As at 31st December, 1967, the principal staff of the Department consisted of the Director General of Public Health (Dr. P. S. Woodruff), the Assistant Director General of Public Health (Dr. G. H. McQueen), the Director of Tuberculosis (Dr. T. G. Paxon), the Principal Medical Officer (School Health) (Dr. C. O. Fuller), the Principal Medical Officer (Epidemiology) (Dr. B. H. Jeanes), the Principal Medical Officer (Occupational Health) (Dr. K. J. Wilson), and the Secretary (Mr. R. W. Laver).

Reorganization proposals approved by the Public Service Board in November, 1967, resulted in the creation of new positions of Assistant Director General of Public Health and Principal Medical Officer (Occupational Health), and the replacement of the Poliomyelitis Branch with an Epidemiology Branch.

The number of employees of the Department as at 31st December, 1967, was 219.

*The National Health and Medical Research Council and Committees*—The 64th session at Perth in April, 1967, and the 65th session at Canberra in October, 1967 were both attended by Dr. P. S. Woodruff as an *ex officio* member of the Council and the Public Health Advisory Committee. Dr. Woodruff is also a member of the Medical Research Advisory Committee, the Standing Grants Committee A, and the Medical Research in Aborigines Sub-Committee.

Dr. G. H. McQueen, Principal Medical Officer (Public Health), and Dr. K. J. Wilson, Medical Officer, Occupational Health, attended meetings of the Occupational Health Committee and the Radiation Health Committee, respectively, and Mr. R. C. McCarthy, Pharmaceutical Inspector, attended meetings of the Food Standards Committee and Poison Schedules Sub-Committee.

*Maternal Mortality Committee*—This Committee met twice during 1967 and considered 10 maternal deaths.

*Clean Air Committee*—The sub-committee appointed from the Clean Air Committee to analyse existing legislation with a view to preparing draft regulations continued to meet during the year and presented draft regulations relating to the control of dark smoke for the consideration of the Committee. The Committee was engaged in detailed examination of these regulations at the end of the year.

*Pre-School Medical Examinations*—The pre-school medical examination scheme which was instituted in 1966 in association with the Mothers and Babies' Health Association, the Australian Medical Association and the Australian College of General Practitioners, was introduced into a further four country areas and four areas in the Greater Adelaide Metropolitan Area. Since the inception of the scheme approximately 800 children have been examined.

*Drainage Co-ordinating Committee*—During the year approval was given for the establishment of a Committee to investigate matters relating to drainage in country towns and to advise the Director General of Public Health and the Director and Engineer in Chief on the appropriate type of system for each town. The Chairman of the Committee is Mr. H. J. N. Hodgson, M.C.E., M.I.C.E., F.I.E.(Aust.), former Assistant Director, Engineering Services, Engineering and Water Supply Department. Dr. G. H. McQueen, Assistant Director General of Public Health of the Department of Public Health, and Mr. R. W. Oliver, Assistant Director, Engineering Operations, of the Engineering and Water Supply Department, are the members of the Committee.

The Committee has concentrated initially on the more urgent drainage problems in country towns with the aim of removing insanitary conditions and protecting water supplies. The installation of common effluent drains by local authorities under the supervision of the Department of Public Health has reduced the demand on the Engineering and Water Supply Department for sewerage systems in country towns with a consequential saving of State Loan Funds.

## 2. GENERAL

### (a) LEGISLATION

*Health Act and Regulations*—Sections 127 and 128 of the Health Act dealing with the reporting of infectious and notifiable diseases were amended in 1966 to exempt gonorrhoea and syphilis from the general provisions of notification and to provide for their notification direct to the Central Board of Health. The paragraphs (1)(e) and (3) of section 127 were not amended at this time, and the corrections were carried out in 1967.

Regulations 86 and 88 were amended and a new Regulation 118A was introduced to provide—

- (i) for a special form of notification of gonorrhoea and syphilis,
- (ii) for the Central Board of Health to request a local board to "follow-up" persons who may be sources of gonorrhoeal or syphilitic infection and who may be living in its district, and
- (iii) for the notification to the Central Board of laboratory investigations that indicate infection due to the gonococcus or spirochaete of syphilis.

There were no changes in the Food and Drugs Act and Regulations.

### (b) VITAL STATISTICS

The following information, supplied by the Deputy Commonwealth Statistician, is included in this report to show changes in the composition of the State's population, and for purposes of subsequent comparison between this and the incidence of diseases reported during the year. Some figures are subject to minor revision. Details for 1966 are shown in parenthesis.

*Population*—The mean population for the State in 1967 was 1,111,675 (1,090,357), showing an increase of 1.95 per cent over the previous year.

*Births*—The number of births registered during 1967 totalled 20,386 (20,319), comprising 10,402 (10,537) male and 9,984 (9,782) female births.

Only 67 more births were registered than in 1966 and the birthrate of 18.34 per 1,000 of the mean population shows the continuation of the downward trend of the birthrate since 1961. The number of male births for every 100 female births was 104.19. This ratio is 2.53 lower than that for 1966.

*Still Births*—Two hundred and eleven (237) still births were registered. They are not included in births and deaths figures.

*Deaths Registered*—The number of 9,071 deaths registered in 1967 has been exceeded only by the record number of 9,323 in 1966. The death rate of 8.16 per 1,000 of the mean population is the third lowest recorded and exceeds only those recorded for 1961 (8.06) and 1964 (8.14).

*Infant Mortality*—A total of 346 (356) infant deaths was registered. The resultant infant mortality rate was 16.97 per 1,000 live births or 0.55 less than the previous record low in 1966. (The Australian infant mortality rate for 1967 was 18.2.)

There were 242 (233) deaths of children under one month and 104 (123) deaths of children aged from one month to one year. The main causes of infant deaths from 1963 to 1967 are shown in Appendix 1.

*Marriages*—The year ended with another record number of marriages registered, totalling 9,434 as against 9,051 in 1966. The estimated rate per 1,000 of the mean population in 1967 was 8.49 (8.29). The marriage rate has been increasing since 1960 when it was a very low 6.99. The average age of marriage for bachelors was 24.62 (24.67) years, and for spinsters 21.75 (21.82) years. The general trend in marriage of single persons at an earlier age is continuing.

The above statistics are summarized in Appendix 2.

(c) CONTROL OF INFECTIOUS AND NOTIFIABLE DISEASES

*Statistics*—Infectious and notifiable diseases in the Second and Third Schedules of the Health Act, except gonorrhoea and syphilis, are notified to local boards of health. Tuberculosis, gonorrhoea and syphilis are notified direct to the Central Board of Health. Details are shown in Appendix 3.

The most notable increases in notifications received were for infective hepatitis 1,299 (978), rubella 969 (226) and gonorrhoea 399 (256). A slight increase was noted in notifications of pulmonary tuberculosis 120 (106).

There were no notifications of diphtheria and poliomyelitis.

*Hydatid Disease*—Three persons were treated at the Royal Adelaide Hospital for hydatid disease. Two were women aged 62 and 67 respectively; they were resident in the Adelaide metropolitan area and there was no previous history of close contact with dogs. The third case was a 56 year old Aboriginal male from the Ernabella Mission in the Far North of South Australia. The first two cases had hydatid cysts in the liver; the other in his lung. All three were treated surgically.

At the Queen Elizabeth Hospital, three persons had operations for the removal of hydatid cysts. One of them was a woman aged 20 with hydatid disease affecting the liver; she had migrated from Greece two years previously. A man aged 52 had hydatid disease of the lung. He had had a cyst removed from the lung four years earlier. He was a German migrant with a history of close contact with dogs in his native country. The third case was a man aged 65 who had hydatid cysts in his liver and omentum. Hydatid of the liver was an incidental finding at a post mortem in the case of a 51 year old man dying of a neoplasm.

Two children were treated at the Adelaide Children's Hospital for hydatid disease. They were aged 13 and 11 respectively; one came from the South-East Region and the other from the Adelaide Hills. In both cases the disease affected the lungs and treatment was surgical.

*Tetanus*—Five persons with tetanus were treated at the Royal Adelaide Hospital; four males aged 19, 26, 40 and 75 respectively, and one female aged 40. In four cases the onset of tetanus was preceded by injury, usually of minor character; in the other case infection was thought to have arisen in a varicose ulcer. One of the patients, aged 19, died. He was said to have been immunized against tetanus in childhood.

A girl aged seven trod on a nail and developed tetanus 11 days later. She had not been immunized. She was treated at the Adelaide Children's Hospital.

An 87 year old man died in a country town from tetanus.

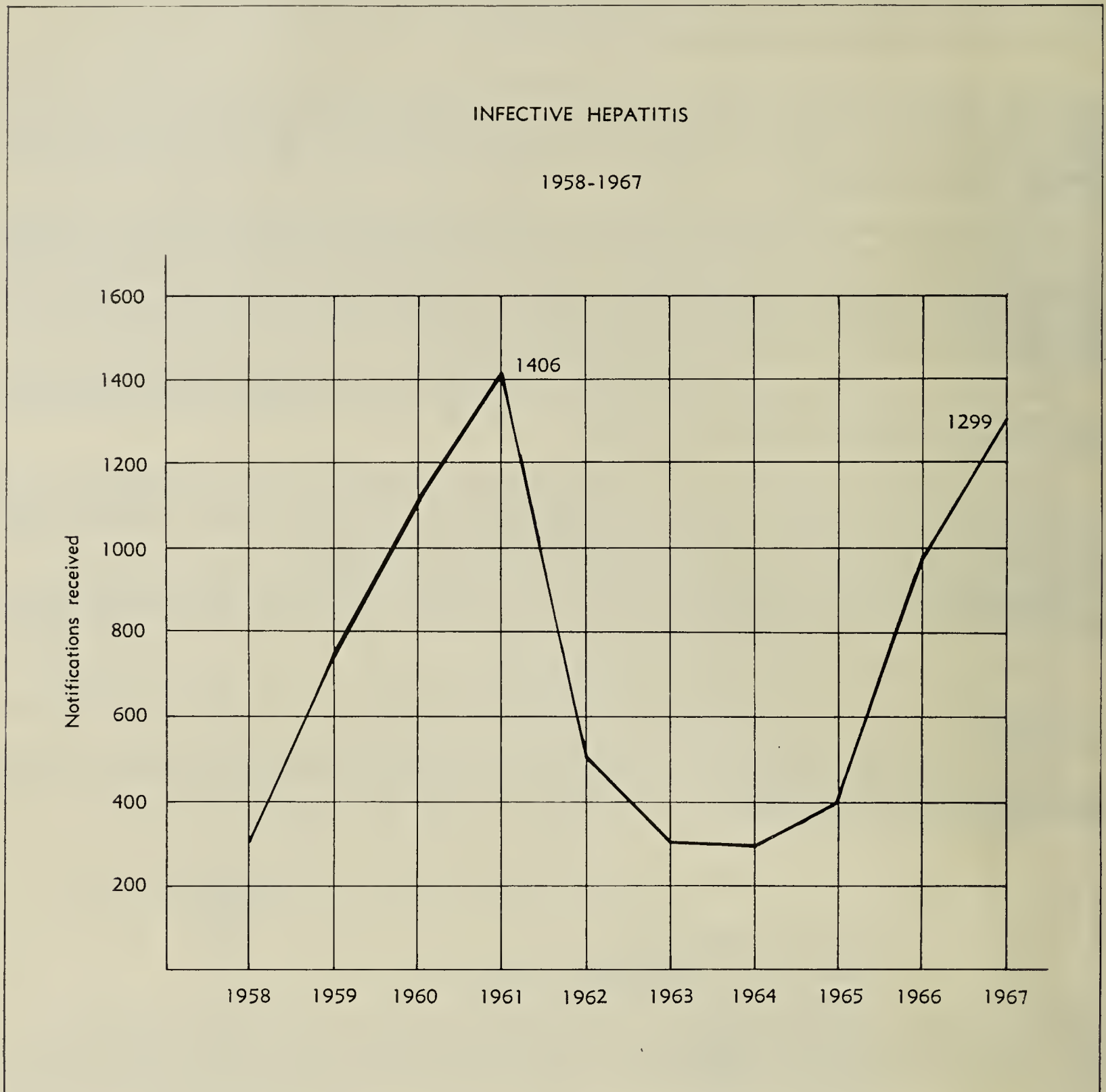
*Salmonella Infection*—One hundred and ten salmonella infections were reported. There was one death due to the disease.

Salmonella strains isolated by the laboratories at the Adelaide Children's Hospital and the Institute of Medical and Veterinary Science were as follows:—

	Number of Cases
Salmonella typhi-murium .....	131
Salmonella bovis morbificans .....	6
Salmonella derby .....	5
Salmonella anatum .....	4
Salmonella adelaide .....	3
Salmonella bareilly .....	3
Salmonella oranienburg .....	3
Salmonella cambridge .....	2
Salmonella havana.....	1
Salmonella potsdam .....	1
Salmonella bukava .....	1
Salmonella enteritidis .....	1
Salmonella fulica .....	1
Salmonella ohlstedt .....	1
Salmonella Group E .....	1
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Fowl manure was considered a possible source of infection in one case of salmonella infection. However, a number of samples of fowl manure sold commercially did not contain salmonella organisms when examined in the laboratory.

*Infective Hepatitis*—The following graph shows that for the third consecutive year there was an increase in the reported incidence of infective hepatitis. Since the disease was made notifiable in 1958, a peak number of notifications were received in 1961 (1,406). After a decline over the next three years, the number of reports received started to rise in 1965.

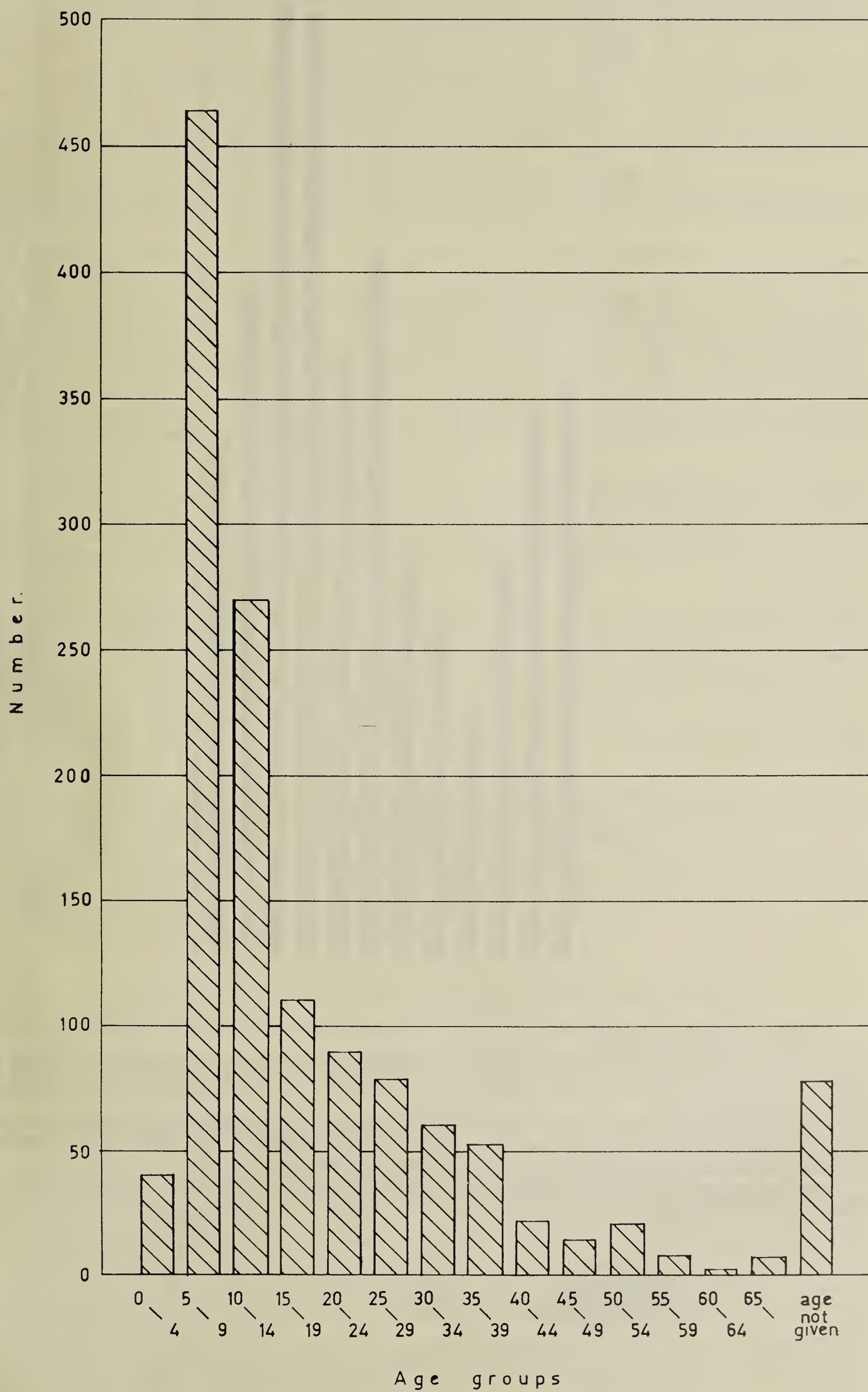


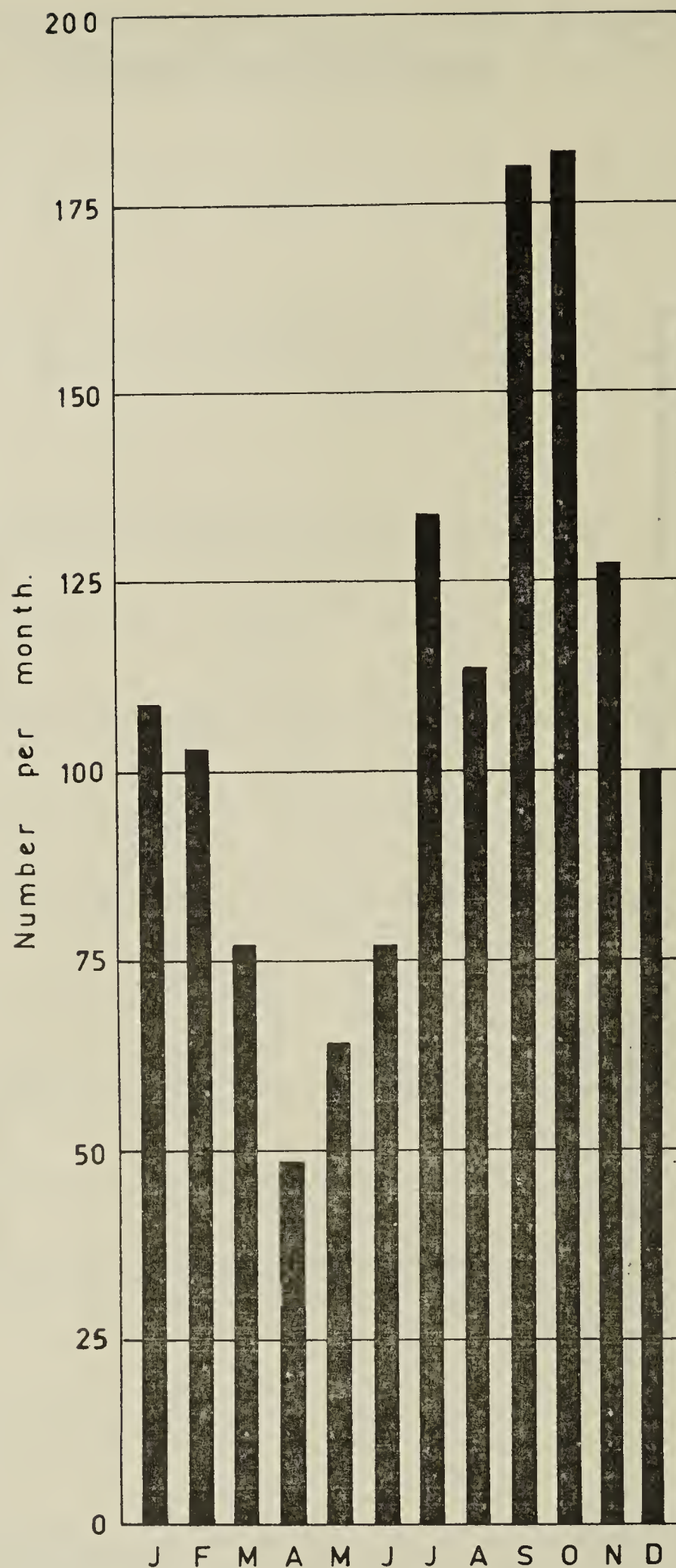
The disease was most frequently reported in the age group of 5-9 years, and was not common in pre-school years. This seems to indicate that peaks of incidence of infective hepatitis could be expected about every six years, that is, when the non-immune population have reached the school age. During the epidemic years it is quite likely that the majority of the population is exposed to infection, especially family contacts. The explanation for the lower rates of notification in other than children of school age is that hepatitis is mostly a mild disease and often goes unnoticed, especially in very young children, and the older population, having been exposed to previous epidemics, is largely immune.

Deaths due to infective hepatitis were reported in three cases, all women, aged 44, 62 and 73 respectively.

The following graphs illustrate distribution of cases notified by age groups, and the monthly incidence of the disease:—

INFECTIVE HEPATITIS.





*Bacillary Dysentery*—The number of cases notified—92—was lower than in 1966 (135). No major outbreaks occurred and there were no deaths.

In the two major psychiatric hospitals, endemicity of this condition was demonstrated by a number of cases of dysentery among the mentally retarded children and elderly patients. These infections were mainly due to *Shigella flexneri* type 3.

A five year old child who had just returned with his family from a holiday in Greece was admitted to the Adelaide Children's Hospital suffering from dysentery due to *Shigella dysenteriae* type 1 (Shiga). Bacteriological investigations showed that other members of the family were not infected.

The laboratories at the Adelaide Children's Hospital and the Institute of Medical and Veterinary Science isolated the following strains:—

	Number of Cases
<i>Shigella sonnei</i> .....	84
<i>Shigella flexneri</i> .....	43
<i>Shigella schmitzi</i> .....	13
<i>Shigella dysenteriae</i> .....	1
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*Typhoid Fever*—During the year only one case of typhoid fever was diagnosed and reported. The patient was a married woman aged 43. She was treated at the Northfield Wards of the Royal Adelaide Hospital and discharged home after several negative bacteriological specimens were obtained. The phage type of the isolated organism was M1, a type which had never before been isolated in Australia.

Investigations carried out in the search of the source of this infection included patients and staff of a geriatric private hospital where the patient had worked as a semi-trained nurse prior to the onset of her illness. All laboratory tests were negative but a patient who died a month earlier had a history of having had typhoid fever 50 years previously.

Other groups of persons investigated were the staffs of the dining room of a city store and two Chinese restaurants where the patient had had occasional meals. These investigations also gave negative results.

*Report on the Control of Gonorrhoea and Syphilis (Medical Officer, Dr. J. A. McGregor)*—During 1967 the Department was officially notified in terms of the Health Act, 1935-67, of 399 persons who were infected with gonorrhoea and of 21 persons infected with syphilis.

Additional information regarding these diseases was obtained from copies of reports received from the Institute of Medical and Veterinary Science, indicating that persons from whom the specimens were taken were suffering from gonorrhoea or syphilis.

In all, the Department became aware of a total of 599 persons infected with gonorrhoea and 41 persons infected with syphilis in South Australia.

Of those infected with gonorrhoea, 424 males suffered with urethritis and 152 females suffered with urethritis, vaginitis or endocervicitis. Two children in the 10 to 14 years age group and three children in the 5 to 9 years age group suffered from vaginitis. Ten women had acute salpingitis and there was one case of gonococcal arthritis in a middle aged woman. Twenty-five women known to be pregnant were treated for gonococcal infection, and no case of ophthalmia neonatorum occurred in any infant born to these women. One case of ophthalmia neonatorum was diagnosed in a female child some days after delivery. Eight males contracted gonorrhoea through admitted homo-sexual activity, and of these five were adolescent, mentally defective, institutionalized patients who were known to have urethral infection and were suspected also of anal infections. One adult male suffered with a bacteriologically proved proctitis.

Of the 41 persons affected with syphilis, 16 men had primary chancres, four men presented with secondary syphilitic rashes and seven men were diagnosed (for the first time) as cases of latent tertiary syphilis. One boy aged 13 was diagnosed as a congenital syphilitic following the investigation of his parents when positive serology was found on their volunteering as blood donors. Five men were known to have contracted syphilis through admitted homo-sexual activity, and of these three had anal primary chancres, one had a tonsillar chancre and one presented with a secondary syphilitic rash.

Three women had primary vulvo-vaginal chancres and eight women were diagnosed as cases of latent syphilis. Two women (suffering from acute gonorrhoea) were diagnosed as cases of latent syphilis on routine serological investigation. One male congenital syphilitic was diagnosed shortly after birth, bringing both parents to examination and treatment. One young female child aged six was diagnosed as a case of congenital syphilis, however it was not possible to trace the parents of this child. Miscarriage occurred in a woman with strongly reactive serological tests for syphilis. The foetus was not however, as far as is known, investigated for treponemal infection.

Officers of the Department interviewed 720 people to find possible sources of infection and contacts that sufferers might have infected. In the course of their investigations, over 1,500 visits were made in various parts of the State.

A total of 95 patients was investigated at the Department's Female Investigation Clinic. Microscopic examination of cervical and urethral smears from three of 72 girls investigated from Vaughan House Girls Reformatory showed the presence of organisms resembling gonococci. Of the remaining 23 examined at the Royal Adelaide Hospital, organisms resembling gonococci were present in smears from five girls.

During the year an amount of \$9,473 (\$9,901) was spent by the Department of Public Health on the diagnosis and treatment of gonorrhoea and syphilis. Most of this amount was paid to the Institute of Medical and Veterinary Science for bacteriological examinations and serological tests done for private practitioners.

Further details are shown in Appendices 4 to 7.

#### (d) REPORT OF THE MEDICAL OFFICER FOR GAOLS AND PRISONS

MEDICAL OFFICER FOR GAOLS AND PRISONS—Dr. G. VINER SMITH, M.B., B.S.

Medical examination and treatment of prisoners at the Adelaide Gaol and the Yatala Labour Prison was carried out by the Medical Officer for Gaols and Prisons, with the assistance of other medical officers of the Department when required.

At Adelaide Gaol, the total number of persons seen on sick parades was 7,541 (6,993), of which 4,255 (4,101) were new admissions and 3,286 (2,892) had reported sick.

At Yatala Labour Prison, the total number of persons seen on sick parades was 2,490 (2,222).

A total of 150 X-rays was taken, 15 minor operations performed, and two general anaesthetics given. Thirty-three prisoners were admitted to the Royal Adelaide Hospital and one to Glenside Hospital.

There is a great need for beds for the sick at the Yatala Labour Prison, and to achieve a desirable standard of medical care, a second full-time medical officer is required.

Sanitation at the Gaol and the Prison is under constant review, and the mechanical handling of nightsoil buckets has been investigated. Attention has again been drawn to the unsatisfactory state of the floor of the kitchen at the Yatala Labour Prison.

The Medical Officer for Gaols and Prisons inspected gaols at Cadell, Gladstone, Mount Gambier, Port Augusta and Port Lincoln, and reported his findings to the Comptroller of Prisons.

## (e) HEALTH EDUCATION

Work in this health activity continued during 1967 with the majority of members of the Branch taking some part in addressing interested community groups, arranging displays and distributing material designed to educate the public on various aspects of maintaining health and preventing disease.

Talks on the care and handling of food, supported by films and slides were given to groups engaged in trades which involved food handling.

Quarterly meetings of health inspectors continued during the year. During the third quarter the meeting took the form of a public health conference at which lectures were given and discussions took place on various topical public health subjects. Members of local boards of health, officers of health and health inspectors from all parts of the State attended and took part in the discussions.

Formal lectures on public health were given to medical students and trainee nurses and health inspectors.

On a number of occasions, meetings in country towns were addressed on common effluent drainage schemes.

*Royal Society of Health*—At examinations conducted by the Society's South Australian Board of Examiners, 52 candidates sat for the Diploma of Health Inspection; 31 passed the examination. Nine candidates sat for the Diploma of Meat and Other Foods Inspection; eight candidates were successful, one gaining a distinction.

## 3. ENVIRONMENTAL HEALTH AND FOOD AND DRUGS

CHIEF INSPECTOR—D. J. WILSON, E.D., F.A.I.H.S.

CHIEF PHARMACEUTICAL INSPECTOR—R. C. MCCARTHY, A.U.A.

## (a) ENVIRONMENTAL HEALTH

*Routine Inspections*—Routine general inspections were carried out in the local board areas of the Corporations of Burra, Kadina and Murray Bridge, and the District Councils of Encounter Bay, Port Elliot and Snowtown. Matters of public health urgency in other areas were also given attention by officers of the Inspection Branch.

*Areas outside Local Government control*—Five visits to areas outside local government areas were made, one to Kingoonya and four to Andamooka. Attention was given to ensuring that food supply, housing, disposal of nightsoil and water supply are satisfactory. Since the introduction of regular visits to these areas the environmental sanitation has improved.

*Conferences*—The Chief Inspector attended the First Australian Refuse Disposal Conference held at the University of New South Wales, Sydney, on 22nd and 23rd August, 1967.

*Health Education*—Arrangements were made for a troop of country scouts to inspect the sections of the Department as part of their training.

*Quarterly Meetings of Health Inspectors*—Meetings were held in March, June, September and December, and the action of local boards in releasing their officers to attend these well attended meetings is appreciated.

The form of the meeting was changed this year to having a field visit and inspection in the morning, with discussion of this visit in the afternoon. Guest speakers were invited to each of the quarterly meetings. The speakers this year were: Dr. C. O. Fuller, Principal Medical Officer, School Health Branch, "School Hygiene and Sanitation"; Mr. F. E. Acton, Senior Analyst, Cereal Branch, Department of Chemistry, "Significance of Prescribed Standards in Bread Manufacture"; Mr. G. K. Stoddart, Inspector, Metropolitan and Export Abattoirs Board, "Meat Inspection".

The September meeting took the form of a two day conference.

*Public Health Conference*—In September, the Department in association with the Australian Institute of Health Surveyors (South Australian Division) held a two day conference. The programme of addresses was:—

Dr. A. C. Green (Commonwealth Department of Health)—"The National Role".

Dr. P. S. Woodruff (Director General of Public Health)—"The State Role".

Mr. R. W. Arland (Town Clerk, City of Adelaide)—"The Local Role".

Mr. J. Dames (Consulting Engineer)—"Engineering Aspects of Swimming Pools".

Mr. J. Johnston (Chief Chemist, Engineering and Water Supply Department)—"Water Standards in Swimming Pools".

Alderman C. J. Frick (Payneham City Council)—"Metropolitan Refuse Disposal Problem".

Mr. J. Milton (Chief Health Inspector, Salisbury City Council)—"Refuse Disposal in South Australia".

Mr. R. L. Boucher (Inspector, Metropolitan County Board)—"Food and Food Premises Inspection".

Dr. K. F. Anderson (Senior Medical Bacteriologist, I.M.V.S.)—"Food Poisoning and Infections".

Mr. C. A. Marten (Food Controller, John Martin & Co. Ltd.)—"Management of Food Services".

Dr. E. Cherry (Medical Officer of Health, Port Adelaide Local Board)—"Infectious Disease Control".

Sister C. J. Nichterlein (Public Health Nurse, Department of Public Health)—"Public Health Nurse's Role".

Dr. B. H. Jeanes (Principal Medical Officer, Poliomyelitis Branch, Department of Public Health)—"Recent Changes in Infectious Disease Control".

Dr. J. A. McGregor (Medical Officer, Department of Public Health)—"Notifiable Diseases".

Dr. K. J. Wilson (Medical Officer, Occupational Health, Department of Public Health)—"Problems from Pesticides".

Mr. R. C. McCarthy (Pharmaceutical Inspector, Department of Public Health)—"Pesticide Use".

Dr. E. F. Harben (Medical Officer, Department of Public Health)—"Medical Aspects of Noise".

Mr. R. G. Stafford (Scientific Officer, Department of Public Health)—"Physical Aspects of Noise".

*Colombo Plan*—Assistance was given to the Department of External Affairs in the training of four Fellows under the Colombo Training Plan: three were public health engineers from India and one a waterworks superintendent from Ceylon. They were mainly interested in the treatment and disposal of sewage and waste waters.

*Refuse Disposal*—Officers of the branch assisted the Committee on Refuse Disposal set up by the Municipal Association in collating details of refuse collection and disposal. Because of increasing domestic and trade wastes there is a need to assess our future refuse disposal needs. It is estimated that in the Adelaide and near Adelaide areas 81,500 tons of domestic refuse are collected and disposed of annually at a cost of approximately \$560,700.

*Pig-keeping*—Recently there has been a trend towards the keeping of large numbers of pigs in confined areas. This has led to problems in the disposal of the wastes associated with this activity. Some have been overcome by the use of ponds in series, and the use of catch-pits under slatted floors. In order to prevent the development of insanitary conditions in piggeries, adequate supervision of these establishments by local board health inspectors is essential.

*Fly Problems*—Again in the autumn and early summer, many complaints were received about the numbers of flies in settled areas. The public seem to be more aware of fly infestation and expect some action to reduce the numbers. When investigating these complaints it was found that improper handling of animal wastes at stables and market gardens contributed significantly to the total fly population. There is a need for improved and regular disposal of this type of organic waste to prevent fly breeding.

*Temporary Public Toilet Facilities*—A request was received from the organizing body of a national sporting event for an assessment of requirements for temporary toilet facilities for a four day national competition. Where permanent toilet facilities are not available at the site, adequate temporary toilet facilities are essential at functions of this nature.

*Millipedes*—Millipedes are not usually regarded as being of public health significance. However, the presence of these creatures in the Adelaide Hills during the latter part of the year, in what was described as plague proportions, caused concern and worry to the householders in the area.

It is thought that the abundant vegetation and moist conditions at ground level were ideal for their multiplication. The complete removal of all vegetation around houses, followed by application of D.D.T. and similar pesticides over a wide area, was partially successful as a control measure.

Inspections were made and advice given in an effort to minimize this nuisance.

*Use of Pesticides by Market Gardeners*—Complaints about market gardeners using pesticides in close proximity to residential areas were investigated. In several instances the complaint followed soil fumigation preparatory to planting. In another instance the complaint dealt with the use of pesticides during the growing period. Advice was given on how to minimize the nuisance as it was not considered to constitute a health hazard. There is a need for market gardeners to appreciate that where they operate close to residential areas the use of pesticides can give rise to conditions that are a nuisance in the meaning of the Health Act and that pesticides should be used with caution.

*Horses*—The manner in which horses are kept in residential areas caused some complaints. These were mainly about the smell, noise and increased prevalence of flies. Where horses are kept in residential areas, they need to be suitably housed and the premises adequately maintained. Manure should be removed at regular intervals.

*Occupational Health*—Health Inspectors attached to the Occupational Health Branch assisted with workplace air sampling, audiometric testing of employees participating in hearing conservation programmes, noise surveys, medical X-ray unit light beam diaphragm collimation, operation of the deposited matter and smoke and sulphur dioxide sampling stations, and inspection of factory sanitation.

*Temporary storage of Organic Wastes*—The storage of kitchen refuse intended for pig food at large kitchens was found to be unsatisfactory. To overcome these conditions a "Code of Practice for the Temporary Storage of Wastes at Kitchens" was produced. Following the introduction of this code conditions have improved.

*Incineration of Industrial Wastes*—The burning of industrial wastes, either on the ground surface or in incinerators, was the cause of complaint.

One manufacturer, who was burning wood waste on the ground surface, subsequently installed an efficient incinerator. In another instance, waste from a plastics manufacturing plant was being burnt on the ground surface, and the company introduced the alternative of sending this waste to a processor for salvage.

In another instance, negotiations are still in progress to resolve the nuisance at a wood machining plant where the incinerator is emitting charred sawdust.

*Arsenic Contaminated Soil*—The construction of new buildings on a site previously used for timber preservation involved the removal of soil contaminated with arsenic. Supervision was given to the removal of the soil to ensure that there was no hazard to the health of the workers. Attention was also given to the disposal site so that future problems could be avoided.

*Common Effluent Collecting Drains*—Field surveys, estimates and production of preliminary designs for country township common effluent collecting drains were completed for Mt. Barker, Mt. Pleasant, Burra, Meningie, Cummins, McLaren Vale, Tintinara, Meadows and a section of Pinnaroo.

Surveys and designs were completed for extensions of existing common drains for new sub-divisions in Barmera, Berri and Pinnaroo.

Final surveys for schemes in Kapunda and Waikerie were completed and supervision of schemes under construction carried out at Renmark, Berri, Nuriootpa and an extension at Barmera.

To assist in implementing the design of common drains and inspection of fibre glass and concrete products, the following equipment was purchased:—

- (1) A Barcol hardness tester for determining fibre glass laminate strength.
- (2) A Schmidt concrete testing impact hammer for testing concrete in the field.
- (3) Mechanical road measures for distance measuring in country township surveys for common drains.

*Fibre Glass Floors and Septic Tanks*—Investigations were made into the manufacture of fibre glass products for floors for wet areas in dwellings and fibre glass septic tanks. Negotiations were carried out with 11 companies interested in the manufacture of these products. Specifications were prepared and approved by the Central Board of Health to cover two methods of fibre glass lamination; one for using spray equipment and the other for manufacture by hand.

*Septic Tanks*—Four thousand one hundred and sixty-five plans of septic tank installations were examined for approval in country and near metropolitan areas and following inspections 4,074 permits authorizing the use of septic tanks were issued.

*Land Subdivisions*—At the request of the Town Planner, 30 land subdivisions were inspected in various parts of the State and soil samples taken for analysis. The subdivisions were inspected to determine a suitable allotment size to allow satisfactory disposal of liquid domestic wastes. The subdivisions ranged in size from one or two allotments to areas of 480 acres.

*Private Hospitals and Rest Homes*—In association with local board officers the Public Health Nurse visited 152 private hospitals and eight rest homes. Progressive improvement in the facilities and services has been obtained, though there are some premises that need further improvement. Generally, the matters that affect the comfort, health, welfare and convenience of the patients have been reviewed. Particular attention was given to the water used for various procedures to ensure that it is suitable for its purpose.

*Whyalla District*—Environmental health activities were carried out in the Western Region which at present comprises the 12 local board areas on Eyre Peninsula and adjacent areas outside local government control. Main activities were in the Whyalla and Port Augusta areas. Supervision of septic tanks involved 1,161 inspections, and 397 permits were issued. Surveying for the Cummins and Cleve common drain systems was done.

The area around Whyalla which is not under local government control was constantly supervised to ensure that development is along acceptable public health lines. This area contains the industrial area and small holdings used for pigs, poultry and horse stables; it is also the source of the city's meat supply and some of its milk.

Relief meat inspection duties were performed for 10 days at Whyalla and five days at Port Augusta.

Immunization was again made available to residents of Iron Knob and Iron Baron and the resident district inspector assisted the medical officer and sister of the Department at the immunization clinics.

### (b) FOOD AND DRUGS

*Committees and Conferences*—Mr. R. C. McCarthy, Pharmaceutical Inspector, attended meetings of the Food Standards Committee and the Poisons Schedules Committee of the National Health and Medical Research Council. He also attended a conference of a working party of Commonwealth and State officers convened to consider and recommend uniform legislation on therapeutic substances.

*Uniform Standards*—Further progress was made in the consideration and development of uniform food standards; in particular the draft for wine received considerable attention from the Food and Drugs Advisory Committee.

*Food and Drugs Advisory Committee*—Mr. K. S. Porter, A.U.A., who had been a member of the Committee for many years did not seek reappointment. He was replaced by Mr. B. W. Hayter, A.U.A., President of the Pharmaceutical Society of South Australia Inc.

*Pet Food Premises*—Following the increased demand for meat as animal food, there has been a corresponding increase in the number of retail outlets for pet meat. Efforts are constantly being made to counter the attitude that because the meat is for consumption by animals a high standard of hygiene in handling is not needed. A survey has been commenced of all premises dealing in flesh for animal consumption, to ensure that this type of flesh is handled and retailed in such a manner that it is protected from contamination with pathogenic bacteria. It is important to ensure that pet food does not provide a source of infection to humans, either by contaminating food intended for human consumption or food preparation areas in the home kitchen. Contaminated pet food could be a source of infection to pets which in turn may infect their owners. The survey has shown so far that there is a need for attention to details of hand washing, tool washing facilities and improved cleanliness of premises.

*Kangaroo Meat*—Kangaroo meat from the "station" country is brought into the metropolitan area, primarily for consumption by animals. At times the amount reaches 50 tons per week. Efforts have been made to ensure that this flesh is not a source of contamination to humans. Though there has been improvement in the industry since it started in a large way in 1959, there is still need for more supervision of the field operations. Several inspections of the shooters' activities have been made with a view to improving conditions under which the carcasses are handled in the field.

*Pleasure Boats on the River Murray*—An outbreak of intestinal infection amongst passengers of a pleasure boat operating on the river was reported near the end of the year. The complaint was at first thought to be of food borne origin, and was not resolved until the water obtained from the river during transit was chlorinated. Following the installation of the chlorinator no further illness occurred. The experience shows that where water is obtained from sources not under the control of the Engineering and Water Supply Department, care should be taken to make sure that it is suitable for human consumption.

*Drinking Water*—Drinking water from a number of sources other than the Engineering and Water Supply Department reticulated supply was examined to determine its suitability for human consumption. Stored rain-water, stored surface water, shallow wells and bores are often subject to pollution and, when requested by property holders, individual water supplies have been examined. Where pollution has occurred, advice is given on methods needed to render the water suitable for consumption.

*Appeal to the Central Board of Health under the Bakehouses Registration Act*—Following the refusal of the Noarlunga Local Board of Health to register a bakehouse for the 1967-68 year, the proprietors appealed to the Central Board. After hearing the appeal, the Central Board considered that the premises should be registered for the current year, provided plans for a new bakehouse were lodged prior to the next registration period, and certain repairs and maintenance were carried out.

*Foreign Matter in Food*—There were some complaints from the public about foreign matter in food, and contaminated containers.

Generally, the food processing industry is well aware of the need to protect food against contamination with foreign matter and ensure that containers are clean prior to filling. All complaints received are investigated and in most instances the only explanation is human negligence. However, the opportunity is always taken to remind the processor of the need for constant vigilance in this area. Operators are usually willing to comply with suggestions for improvements in methods of inspection of cleaned returnable and re-usable containers. The public could assist in reducing this problem by not using for other purposes containers designed for food.

*Buffalo Meat*—The introduction of buffalo meat from the Northern Territory has continued this year. The meat is of two categories; either certified by the Territory authorities as suitable for human consumption or prepared without supervision and not certified as suitable for human consumption. At the end of the year the Metropolitan and Export Abattoirs Board decided to prohibit the introduction of uncertified buffalo meat into its area. This type of meat can still be brought into the remainder of the State provided it meets with the requirements of the Health and Food and Drugs Acts. Uncertified meat is processed for pet food.

During the year advice was received from the Northern Territory authorities of the shipment of 906,082 pounds of certified meat and 553,504 pounds of uncertified meat.

*Meat introduced into the Metropolitan Area*—Attention has been given to those slaughterhouses adjacent to Adelaide but outside the Metropolitan and Export Abattoirs area to ensure that the meat produced and brought into the metropolitan area is suitable for consumption.

*Reconstituted Milk*—It was again necessary to issue permits to five milk treatment plants to adjust the solids not fat component of milk to the minimum required by legislation because of the reduced amount of this component in milk during the late summer and early autumn. Adjustment is made by the addition of dried skim milk powder.

*Poultry Dressing*—The amount of poultry consumed has increased markedly in recent years with a consequent increase in the number of premises engaged in dressing of birds.

Some undesirable practices are associated with the dressing of poultry and supervision is needed to ensure that the finished product is not contaminated. The main points needing special emphasis are satisfactory evisceration of the carcass and the use of potable water during washing and cooling.

*Water in Frozen Poultry*—Complaints of frozen poultry containing excessive amounts of water were received during the year, and consideration is being given to the best method of ensuring that the amount of water draining from frozen poultry on thawing is reasonable and consistent with good processing practices.

*Unpasteurized Cheese*—Manufacture of cheese from pasteurized milk only was considered. In this respect some imported cheeses thought to be made from unpasteurized milk were sampled. However, difficulty was experienced in establishing that the cheese had been made from unpasteurized milk as the local distributors had no way of determining the original source of the cheese.

Fifteen samples of various types were obtained and examined for the presence of brucella organisms and their pH values were estimated. Brucella organisms were not detected in any of the samples and the pH values were within the range considered to prevent the survival of brucella organisms.

*Cream Samples*—Thirteen samples of cream of various types were bought for examination. It was found that three did not conform with the composition or labelling requirements of the Regulations and the companies concerned were subsequently prosecuted.

*Imported Prawns*—Six consignments of frozen prawns from overseas were examined bacteriologically. Three were unsuitable and their sale in South Australia prohibited.

A standard for the microbiological quality of frozen prawns was agreed to during the year.

*Imported Cypriot and Spanish Brandy*—Seven brands of Cypriot and one of Spanish Brandy were found to have alcoholic strengths less than that provided for in Food and Drugs Act, section 22 (5). The withdrawal of these brandies from the retail trade was negotiated and the suppliers advised to ensure in future that brandy offered for sale is of the required strength.

*Wine and Spirits*—A total of 8,012 samples of wines and spirits were tested at 355 licensed premises, with an average of 24 tests per visit. In 30 cases samples for analysis were taken. Four licensees of hotels were prosecuted for breaches of the Food and Drugs Act on evidence resulting from these analyses.

In 40 instances licensees were advised to cease practices that are minor breaches of the Food and Drugs Regulations dealing with the protection of food from contamination.

*Poison Regulations*—These regulations have continued to operate satisfactorily. There has been an increasing number of instances of abuse of the amphetamine group of drugs coming under notice.

*Hallucinogenic Drugs*—In view of the apparent increasing abuse of the hallucinogenic drugs, the Police Offences Act was amended to make it a serious offence to be in possession of or to use proclaimed drugs without lawful excuse. The Central Board of Health recommended that the hallucinogenic drugs and the amphetamines should be proclaimed for the purposes of that Act.

*Dangerous Drugs*—During the year, five addicts were added to the register and, with a net increase of two, the total number at the end of the year was 33. There has been a trend towards addiction to the relatively new drug, Dextromoramide, with six cases on the register. There were 174 cases notified of long term treatment with narcotic drugs for analgesic purposes.

Details of samples of food and drugs from all sources analysed at the Department of Chemistry during 1967:—

Article	No.	Result of Analysis	Action Taken
Apple .....	1	Unsuitable for analysis decomposed .....	—
Beer .....	6	Conformed .....	—
Brandy .....	15	Nine failed to conform .....	One prosecuted
Bread .....	57	Twenty-seven failed to conform. One poor quality.....	Eight warned
Butter .....	4	Samples slightly rancid .....	Local board of health advised
Canned plum pudding ...	1	Under positive pressure of 15" mercury—5 fl. oz. gas .....	Metropolitan County Board informed
Cabana Sausage .....	1	Foreign material in sausage .....	Metropolitan County Board advised
Canned spirit .....	13	Samples obtained for information only.....	Companies informed of requirements
Corned Meat .....	1	Conformed to regulations in respect to Potassium nitrite .....	—
Cream .....	19	Ten failed to conform .....	Two warned
Fresh mixed vegetables ...	1	Inconclusive .....	—
Gherkins.....	3	Conformed to Regulations regarding traces of copper.....	—
Honey .....	3	Conformed to Regulations regarding arsenic .....	Dept. of Agriculture and local board informed
Ice Cream.....	9	Two conformed; seven failed to conform in regard to food solids	Metropolitan County Board informed
Manufactured Meat .....	5	All conformed .....	—

Details of samples of food and drugs from all sources analysed at the Department of Chemistry during 1967:—  
continued

Article	No.	Result of Analysis	Action Taken
Margarine .....	1	Investigation only .....	Metropolitan County Board informed
Metwurst .....	2	Conformed to standard .....	Local board informed
Milk .....	913	Twenty-five failed to conform.....	Five prosecuted, five warned
Mince Meat .....	69	Eighteen failed to conform .....	Eleven prosecuted, five warned
Powdered Milk .....	1	Vegetable matter, rodent lair, droppings .....	Local Board and Metropolitan County Board informed
Raw Potato Chips .....	1	1.8 grains SO <sub>2</sub> per lb. ....	—
Rolled Beef .....	9	Two failed to conform .....	Two prosecuted
Ryvita .....	1	Conformed in respect of traces of lead .....	Local Board informed
Sausages .....	36	Eight failed to conform .....	Three prosecuted
Summer and Temperance Drinks.....	16	Three failed to conform .....	Two warned
Tablet .....	1	Identified as penicillin .....	Local Board informed
Water .....	19	One failed to conform .....	Complainant informed
Wine .....	20	One failed to conform .....	Referred to Crown Law Office

The majority of the above samples have been taken by local authorities under the provisions of the Food and Drugs Act and submitted through the Central Board of Health to the Department of Chemistry. Sampling is done by officers of the Department of Public Health only in special cases to assist local authorities or as part of a specific investigation.

4. OCCUPATIONAL HEALTH AND AIR POLLUTION

PRINCIPAL MEDICAL OFFICER (OCCUPATIONAL HEALTH)—Dr. K. J. WILSON, M.B., B.S., D.P.H.

*General Activities*—During the year, the services of the branch were available to give advice, on request, on all health aspects of occupation and occupational environment. Requests were often of a general nature relating to industrial health services, first-aid equipment and working conditions, or specifically related to assessment of potential hazards of established or proposed processes.

Much of this work has involved technical assessment, by scientific measurement, of the occupational exposure of workmen to such contaminants as chemicals, dusts, noise, heat and radiation. Each assessment made has been accompanied by recommendations formulated to safeguard personnel wherever a hazardous environment has been revealed.

Investigations undertaken by the branch during 1967 have originated from the following sources:—

Industrial Management.....	13
Labour Organizations .....	8
Waterside Workers Federation (through the Australian Stevedoring Industry Authority) .....	16
	— 24
Department of Labour and Industry .....	10
Other Government Departments.....	18
Local Boards of Health .....	3
Departmental Surveys—	
Lead .....	110
Plating and Heat Treatment .....	57
Others .....	45
	— 212
Hearing Conservation Programmes—	
Continued .....	7
New .....	2
	— 9
Accidents and Illnesses .....	9
Follow-up Investigations .....	10
Miscellaneous .....	23
	— 331

The results of many of these investigations revealed that the widely-known dangers inherent in the use of many substances, for instance lead, solvents, silica dust and asbestos, were often not appreciated by both employers and employees, through either ignorance or indifference. Further, technological progress is constantly introducing new substances and new processes. Knowledge of hazards associated with these is usually slow to reach the users and, indeed, frequently does so only through contact with specialists in the field of industrial hygiene and safety who are familiar with the published results of current research.

The remedy for this situation lies in education of all those concerned with safety in industry. It is clearly impracticable for the Department to maintain full surveillance of all industrial establishments in which hazardous processes are conducted, so that alternative means of disseminating information and creating awareness of hazards must be explored.

It appeared that the most practical method of providing a basic understanding of industrial hazards and recent advances in knowledge of occupational health, would be by a comprehensive course of lectures aimed to reach the greatest number of people concerned in its application. To organize such a course, an *ad hoc* committee was formed, composed of representatives from this Department, the Department of Labour and Industry, the South

Australian Branch of the Safety Engineering Society of Australia, and the National Safety Council of Australia, South Australian Division. Negotiations have been completed for a five day course to be presented by lecturers of the Occupational Health Unit of the School of Public Health and Tropical Medicine, University of Sydney, in May, 1968.

*Conferences and Interstate Visits*—Following the successful conference in 1966 on Lead Absorption, the Broken Hill Associated Smelters sponsored a second conference in July, 1967, under the title of “Medical and Administrative Aspects of Lead Absorption”. This meeting was attended by medical and safety officers of the lead mining and smelting industries and the occupational health medical officers of New South Wales, Victorian and South Australian Departments of Public Health. Dr. K. J. Wilson represented this Department. Papers were presented by various members on such subjects as the attitude of the industrial medical officer, the Commonwealth and State industrial hygienist, and the teacher to lead absorption, the significance of stippled cells, hygiene and heat problems in lead smelting plants, lead poisoning, and the “American Scene” regarding lead absorption and lead in air pollution. The meeting was addressed on these latter subjects by Mr. K. W. Nelson, Director of the Department of Hygiene of the American Smelting and Refining Company. Mr. Nelson’s wide knowledge and experience greatly added to the success of the Conference.

Dr. E. F. Harben attended a three weeks course on Occupational Health for medical officers, presented in Sydney by the School of Public Health and Tropical Medicine.

The Occupational Health Committee and the Radiation Health (Standing) Committee of the National Health and Medical Research Council each held two meetings during the year, which were attended by Dr. G. H. McQueen and Dr. K. J. Wilson respectively.

In September, Dr. Wilson represented the Department at a Conference for Training Institutions, sponsored by the Department of External Affairs. The conference reviewed the scope of post-graduate training, both present and potential, available through Government Departments to qualified personnel of Colombo Plan countries and other “emerging” nations. The possibility of offering specialized courses on some specific activities was explored. A course on effluent disposal by common drain systems would be an example of this type of training which this Department could offer.

The annual meeting of Scientific Officers engaged in the field of industrial hygiene was attended in Melbourne on 31st August and 1st September, 1967, by Mr. G. F. Sweetapple. Present were representatives from all States and two Departments of the Commonwealth of Australia. At least one person representing each State or Commonwealth Department contributed by presentation of a short paper, and all persons took part in the ensuing discussion.

The subjects discussed were the interpretation of hygienic standards for mixtures, experiences with field test equipment, the industrial hygiene services to small factories, the problems of diesel engines working in confined spaces, benzene exposures on tankers, ozone estimations and hazards from these contaminants, bromochlorodifluoromethane as a fire extinguisher, hazards from silage pits, operation of L.P.G. propelled vehicles, thorium in abrasive blasting materials, amendments to Australian Standards for personnel safety equipment, bulk shipment of sulphuric acid, and health hazards associated with manganese ore.

Papers on “Mercury Contamination in Dental Surgeries” and “Results of Polycyclic Hydrocarbon Measurement in Foundries” were presented by Mr. Sweetapple.

Mr. R. G. Stafford assisted in the organization of and attended the 7th Annual Meeting of Physics in Medicine and Biology, held in Adelaide in May by the Biophysics Group, Australian Institute of Physics. Dr. Harben also attended some of the lectures relevant to the study of noise-induced hearing loss.

*Lectures and Addresses*—Officers of the branch delivered lectures or addresses to several organizations during the year, as follows:—

Medical Students, University of Adelaide—Two lectures on Occupational Health, and demonstrations in Public Health—Dr. K. J. Wilson.

South Australian Branch, Safety Engineering Society of Australia—Address on “Safe Handling of Pesticides”—Dr. K. J. Wilson.

5th National Foundrymen’s Convention—Address on “Industrial Noise”—Dr. K. J. Wilson.

Port Adelaide Rotary Club—Address on “Industrial Noise”—Dr. K. J. Wilson.

Pest Control Operators (Certificate Course)—Two lectures on “Safe Handling of Pesticides”—Dr. K. J. Wilson.

Dental Nurses (Certificate Course of the Australian Dental Association)—Lecture on “Radiation Hazards”—Dr. K. J. Wilson.

Public Health Conference—

Address on “Hazards of Pesticides”—Dr. K. J. Wilson.

Address on “Medical Aspects of Noise”—Dr. E. F. Harben.

Address on “Physical Aspects of Noise”—Mr. R. G. Stafford.

Inspectors Conference, Department of Labour and Industry—

Address on “Medical Aspects of Industrial Noise Exposure”—Dr. K. J. Wilson.

Address on “Physical Aspects of Noise”—Mr. R. G. Stafford.

Metal Trades Safety Group (Chamber of Manufacturers)—Address on “Sterilization of 1st Aid Dressings”—Dr. E. F. Harben.

South Australian Institute of Technology, Course on Application of Radioisotopes—Lecture on “International and State Legislation on the use of Radioisotopes”—Mr. R. G. Stafford.

South Australian Institute of Technology Colloquy for 3rd Year Applied Physics Students—Lecture on “Measurement of Industrial Noise”—Mr. R. G. Stafford.

*Advisory Committee on Noise*—The Committee met on nine occasions during 1967.

As it entered its third year of activities, the Committee felt it desirable to review the results of endeavours made over this period to achieve an appreciation of the hazards of noise by industrial management. For this purpose, the Committee, in December, 1966, had requested the Branch to prepare a report of all industrial noise surveys undertaken to that time, and of any action arising therefrom and leading to reduction of the hazard of hearing loss. This report was presented to the Committee in April.

The report, titled "Noise Surveys and Hearing Conservation Programmes" covered the results of all noise surveys and hearing conservation programmes carried out by the Branch between June, 1964 and December, 1966.

The Advisory Committee, after full and careful study of the report, considered:—

- (a) that the report confirms that excessive noise exposure with consequent loss of hearing in workers in many South Australian industries is extensive;
- (b) that the report shows that the present activities of the Department are adequately exposing the extent of the problem of excessive noise;
- (c) that the general overall response of both employers and employees is disappointingly small and reveals a lack of appreciation of the problem and of their responsibilities.

In order to increase awareness in both employer and employee of the physiological and psychological hazards arising from excessive noise in industry, and to obtain some positive action in engineering noise abatement and hearing protection, the Committee formulated recommendations to the Director General of Public Health dealing with Education, Ear Protection, Staff and Legislation.

Action followed immediately on two of these recommendations, viz. Education and Ear Protection. Planning was commenced to hold a Symposium on Noise in Industry in February, 1968, in conjunction with the University of Adelaide and the Department of Labour and Industry. The Symposium was to be as comprehensive as possible, orientated to interest and influence executive management of industry, and led by speakers of sufficient standing to achieve this aim.

Through the appropriate professional newsletter, the Committee endeavoured to contact all medical practitioners willing to provide to industry a consultative service in Hearing Protection Programmes. It was hoped to establish a panel to which management could be referred for medical oversight of audiometry, ear protectors and job placement of employees. Unfortunately the response was very poor, so that alternative methods of promoting this service must be explored.

*Radioactive Substances and Irradiating Apparatus Regulations*—The compliance by users of radioactive substances and irradiating apparatus with the relevant regulations has been supervised by the Branch throughout the year. In addition to specific investigations and surveys, applications for licence or registration have been checked, Film Badge Service results scrutinized, and recommendations made for safe handling, storage and transport of radioactive material.

Appendix 8 shows the number of licences and registrations granted under the Regulations.

*Film Badge Service—Radiation Monitoring*—Personnel radiation monitoring for radiation workers within South Australia is carried out by the Commonwealth X-ray and Radium Laboratories. The total number of organizations receiving film badges at the end of 1967 was 361, embracing approximately 1,660 persons, compared with 337 organizations involving about 1,600 persons at the end of 1966.

The distribution of organizations using the Service is as follows:—

(Figures for 1966 are shown in brackets)

38	(33)	industrial firms or departments
154	(147)	dentists
47	(45)	hospital departments
42	(37)	scientific organizations or departments
7	(7)	chiropractors
5	(5)	veterinary surgeons
66	(61)	private medical practitioners

During the year 15 excessive doses of short term exposure were recorded. The reasons for these were investigated and the conditions corrected by officers of the Branch.

*Medical Examinations*—Applicants for permanent appointment in the South Australian Public Service and for acceptance by the South Australian Superannuation Fund, and persons awarded cadetships, were examined by medical officers, and other medical examinations for specific purposes were carried out, as follows:—

Permanent Appointment and/or Superannuation Fund—

Public Service Board	477
South Australian Superannuation Fund	513
State Bank of South Australia	25
Medical examinations carried out elsewhere (checked by Department)	132

Special Examinations—

Cadets	57
Housing Loans Redemption Fund	15
South Australian Harbors Board (Pilots)	12
Entry to Aboriginal Reserves (Mines and Lands Departments)	15
Miscellaneous (Invalidity, Job Suitability, etc.)	17

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*New Equipment*—The following major items of equipment were purchased during the year for use in technical investigations:—

- (i) Electrostatic Sampler: for sampling metal fumes and dust.
- (ii) Wet Test Meter: for calibrating and checking air flow rates of sampling apparatus.
- (iii) Balance: for weighing samples collected for analysis.
- (iv) Mercury Vapour Meter.
- (v) Carbon Monoxide Meter.
- (vi) Statistical Distribution Analyser Type 4420.
- (vii) Audio Frequency Spectrometer Type 2112.
- (viii) Level Recorder Type 2305.
- (ix) Artificial Ear Type 4152.
- (x) Accelerometer Sets Type 4312, 4315, 4316.
- (xi) Vibration Pick-up Pre-amplifier Type 1606.

Items vi-xi are used in the investigation of industrial noise exposure, vibration analysis and the calibration of audiometers used by the Branch.

*Hearing conservation programmes*—Hearing conservation programmes involving theme addresses, pre-employment ear examination and audiometry, fitting and supervision of ear protectors, and periodic audiometry (six-monthly) were continued in seven industries and programmes were commenced in a foundry and a concrete-products company, making a total of nine programmes supervised by the Branch. These programmes involved 349 employees. In addition, attempts were made to introduce programmes to 13 other industries during the year, but for various reasons the programmes were postponed.

The experience of the Branch in this field highlights the need for continuing educational efforts directed towards both employer and employee. For varying reasons, some employers are reluctant to accept the fact of noise-induced hearing loss. Due to suspicion of employer's motives or to lack of employer/employee communication, employees are often reluctant to participate fully. Unless adequately motivated before commencing the practical aspects of a programme, resistance, disinterest or only half-hearted co-operation is encountered. Further, due to a high rate of labour turnover in some industries, the employee educational aspect of a programme is a continuing one, often to an audience whose language, education, pattern of social customs and experience make communication difficult.

Nevertheless, in spite of the difficulties and demands on time, it is considered that the demand for hearing conservation programmes will grow. The Branch activities in this field, in addition to providing a practical preventive health service to employees already protected, will enable officers to gain valuable experience. This experience will qualify them to give effective advice and practical guidance to employers, employees and private industrial medical officers in the establishment of programmes in the future.

*Impulsive Noise*—An audiometric survey was made of men using "Ramset guns" in the building trade. Forty-four men, who use these tools for short periods daily with off periods of up to one month, were examined "on site". The exposure periods varied from 3 to 17 years. Without exception, all had a hearing loss, the range being 10-70 dB at 4,000 cps. Further investigations, including noise tests on equipment, will be undertaken on this subject.

#### *Respiratory Investigations—*

- (i) *Noise*—In an endeavour to verify the results of overseas research on the effects of noise exposure, a study was made of the effects of noise on respiration, pulse rate and blood pressure. Thirty-four officers of the Department volunteered to be subjected to a simulated industrial noise of 95 decibels for half an hour, after which the forced expiratory volume (1 second), the forced ventilatory capacity, blood pressure and pulse rate were measured. No significant changes were noted when compared with pre-exposure values.
- (ii) *Ink mist*—A study of the respiratory effects of inhalation of ink mist was carried out in a large printing office. Although the number involved was too small for statistically significant conclusions, the results were interesting and suggested that further work should be carried out. Changes noted in forced expiratory volume (1 second) after exposure suggested that those most affected were "smokers with a history of allergy", followed by "smokers with a history of chest disease", then "smokers with a history of previous dust exposure", "smokers with no adverse history", and finally non-smokers.

*Industrial Dermatitis*—Thirty-five cases of industrial dermatitis, reported by the Department of Labour and Industry, were investigated. Some of the causative agents were trichlorethylene, tar products, sealing compounds, solvents, cement, potassium iodide, cutting oils, detergents, resins and fibreglass. Preventative advice was given, with emphasis on personal hygiene and avoidance of contact.

*Miscellaneous*—Medical examinations, including blood tests, were made in cases of suspected poisoning by pesticides, exposure to lead and lead dust and fumes, benzene (in seamen on tankers), and tetrabromoethane.

#### *Investigations of Chemical Hazards—*

##### (i) *Lead*

Further to inspections made in industries using a large amount of lead, users of smaller amounts were investigated in the electronics industry, automotive industry, plumbing industry, public utilities, Government utilities, scrap metal dealers, ship breakers, ammunition manufacturers, State Railways, and enamelling industry. The result of these inspections revealed that only in approximately three per cent of instances lead was used. Generally it would appear that lead was being replaced for economic reasons by other more satisfactory materials.

For the above and other reasons the plumbing trade is using copper or plastic pipes in place of lead. Paint manufacturers avoid lead bases unless a special order containing lead is required by the customer. A limited amount of lead is used in paints applied to road and rail bridges and on ferries. In the electronics industry, components containing lead are imported, and the only lead handled is in solder for electrical connections.

Where lead is used in the industries listed, the quantity is small, use is generally occasional, oxides are handled in very few instances, and personnel and management appear to be aware of the hazards.

It is proposed to carry out some air sampling where lead paints are mixed, and also where soldering is carried out continuously and in large volume.

Lead in air sampling was carried out in a factory where plastic material was prepared, using a lead plasticiser. The results of sampling indicated that concentrations of the metal were higher than would have been expected, but it was considered that this may have been the result of the collection of lead particles of size greater than that of the respirable range. It is intended to carry out further sampling to determine the concentration of lead particles of respirable size.

At the larger private printing establishments and at the Government Printing Office, a further series of air sampling was carried out. From the results obtained, it was apparent that it was unlikely that any operator would have been excessively exposed to lead in air.

Air sampling was also carried out at the larger battery manufacturers in the Adelaide metropolitan area. In the factory having one of the largest production rates, lead in air concentrations were excessive in association with some processes. The company concerned was aware of the situation and was endeavouring to correct the fault. In the remaining firms, lead in air concentrations were found to be satisfactory.

Following a request from a trade union, air sampling was conducted to determine the exposure of personnel repairing rail trucks which had been used for the carriage of lead concentrates. It was found that high concentrations of lead in air were generated during the processes of welding of metal parts and repairing of woodwork. Recommendations for protection of the operators while carrying out the above work were made. In addition, advice was given to ensure that the lead contaminated wood did not cause health hazards during disposal.

(ii) *Benzene*

Although a number of inspections was made during the year to determine the extent to which benzene was used in South Australia, little progress was made with air sampling to evaluate occupational hazards from this air contaminant. Unfortunately because of the pressure of other commitments little time could be found to prepare equipment and organize sampling to be carried out by non technical personnel.

Inspection of these industries during the survey has resulted in a greater awareness of the danger of benzene poisoning and in some instances has led to substitution by a less toxic solvent.

(iii) *Electroplating, Heat Treatment, Anodizing and Degreasing*

This survey was initiated to determine the occupational exposure to chemical contaminants in the above processes. The survey was concluded late in the year, and the facts obtained are being assessed. A more detailed inspection was made at one plating shop to determine likely causes of a case of dermatitis. Following this, appropriate recommendations regarding safe handling of materials were made.

(iv) *Carbon Tetrachloride*

A survey to determine the occupational exposure of persons using carbon tetrachloride and more particularly those engaged in maintaining and using carbon tetrachloride fire extinguishers was undertaken late in the year. A programme of air sampling was drawn up and this will be carried out early in the next year. It is also intended to determine the amount of the decomposition product phosgene present as well as carbon tetrachloride under conditions of use.

(v) *Artificial Fertilizers*

Further work was carried out to assess fluoride fumes evolved during the manufacture of super-phosphate at a large factory in the Adelaide metropolitan area. As a result, it was considered that operators would not be occupationally exposed to hazardous concentrations.

Air sampling was also conducted at another factory in which it was found that at one particular location excessive fluoride fumes occurred. Further tests will be made when the company has carried out proposed alterations.

(vi) *Foundry Fumes*

As the result of a request from the Federated Moulders (Metals) Union of Australia, through the Department of Labour and Industry, a series of prolonged air samples was taken in three foundries employing consumable polystyrene patterns to determine possible health hazards. Samples were also taken in foundries using conventional sand moulds. The results indicated that the concentrations of known carcinogenic polycyclic hydrocarbons were not significantly higher in the foundries using consumable polystyrene patterns.

Sampling was also conducted to determine occupational exposure to formaldehyde fumes resulting from the use of a sand binder at another foundry. Concentrations were found to be below the appropriate threshold limit value.

(vii) *Welding*

Occupational exposure to fluoride and manganese were determined in a large workshop. This allayed union fears that the submerged arc process subjected a welder to excessive concentrations of these air contaminants.

In another instance, carbon monoxide levels were recorded during carbon dioxide welding at a factory. Concentrations in air in all cases were well below the threshold limit value.

As a result of a union complaint, extensive air sampling has been planned to determine whether welding on steel surfaces, primed with proprietary paints, results in a hazard to health.

(viii) *Solvents*

During the year six investigations were made on the use of solvents. In four instances paint thinners were considered. Measurement of ventilation was involved in three cases, measurement of vapour concentrations in two, and analysis of the solvents only, in the other. The last investigation concerned the use of hexane and ether in an analytical laboratory.

In one case, where trichlorethylene concentrations were measured during a cleaning process, it was recommended that more adequate ventilation should be provided. In the other cases, it was considered that the concentrations of solvent vapour present would not be harmful to health.

(ix) *Service to the Australian Stevedoring Industry Authority*

Assistance was requested on 16 occasions by the Waterside Workers' Federation through the Australian Stevedoring Industry Authority. Eight of these requests concerned irritating odours either in the cargo or part of a previous cargo. In one instance, a large spillage of toluene di-isocyanate had occurred. Recommendations for personal protection of personnel and for decontamination of the spillage before waterside workers recommenced work were made.

(x) *Exhaust Gases*

Extensive air sampling was carried out to determine occupational exposure to exhaust fumes sustained by the enginemen operating a particular class of diesel-electric locomotive. Three journeys were made under full working conditions. In all samples carbon monoxide concentrations were extremely low. Extreme conditions and only for a short duration resulted in total oxides of nitrogen approaching the threshold limit value. In another instance, carbon monoxide and oxides of nitrogen were measured where diesel tow motors were operated. Concentrations of these contaminants were below the respective threshold limit values.

(xi) *Oil Mist*

Oil mist measurements were made at a factory carrying out heat treatment, and also at three printing establishments. In the latter industry, oil is a constituent of printing ink. This creates problems, particularly where high speed printing presses are operated. In all instances oil in air was below the tentative threshold limit value.

Oil mist was also measured at a large Government Department testing shed where bitumen sprays were checked. Oil in air concentrations were excessive and recommendations were made for their reduction.

(xii) *Departmental Investigation*

Mercury in air was determined during operating conditions in two dental caravans used by dentists of the School Health Branch of this Department. The concentrations in one caravan were excessive, and appropriate recommendations were made to overcome this problem.

(xiii) *Accidents*

Three investigations were made as the result of accidents from toxic substances used occupationally. Two cases, one the accidental release of chlorine gas at a school, and another the intoxication of a workman cleaning a trichlorethylene tank, resulted in temporary illness; the third case was the asphyxiation of a man in a wine vat.

(xiv) *Miscellaneous*

A wide variety of investigations were made as the result of requests from many sources. Some investigations involved recommendations for safe handling of toxic substances, some involved information regarding potential hazards, while the remainder required air sampling to determine the extent of the hazard. Recommendations were made for such items as safe handling procedures for sulphuric acid, hydrochloric acid, epoxy resins, chloropicrin and malathion.

Information was supplied regarding potential dangers or otherwise of aluminium utensils, carbon tetrachloride, ethylene glycol derivatives for use in an ultra-sonic cleaning bath, epoxy resins, and hydrogen sulphide. A proprietary film drier and other items were analysed to determine possible harmful constituents.

Air sampling was carried out to determine occupational exposure to sulphuric acid mist. As a result it was recommended that increased ventilation be provided.

Comments were made on Draft Lead Regulations and Draft Australian Standards for Ethanol and Butanol.

*Investigations of Physical Hazards—*(i) *Radiation*(a) *Survey of Irradiating Apparatus*

During August the Occupational Health Branch began using the CDC 3200 Computer of the ADP Centre for the preparation of information required for the effective supervision of the use of irradiating apparatus in South Australia.

The data obtained from applications for registration of irradiating apparatus and from results of subsequent inspections carried out by the Branch were transferred to punched cards and processed by the computer. From this data, complete "print-outs" showing all pertinent information for each irradiating apparatus were prepared, the lists being divided into sections dependent on the occupation of the owner. Special lists of equipment requiring further testing before approval were obtained.

This source of ready information will be updated at least once annually to include new irradiating apparatus brought into service, and to show the result of follow-up inspections.

The distribution of irradiating apparatus at present included in the automatic data processing system is shown in Appendix 9. The number of these units having light beam diaphragms, primary beam filtration of less than 2 mm. of aluminium, and the number of centres in each classification not registered with the Film Badge Service operated by the Commonwealth X-ray and Radium Laboratories at the time of inspection are shown as an example of the information which can be taken from the computer in the form of printed results. Follow-up visits have been or will be made of all cases where non-compliance with statutory requirements has been found.

(b) *Survey of Industrial Radio-isotope Limit Indicators*

A total of 72 of these indicators was examined in industrial plants in South Australia. This number includes five new units which were installed during the year.

The installation of each unit was examined with regard to excessive radiation leakage from the source housing; adequate shutters and control for primary radiation beam; and appropriate labelling of the source as required by the Radioactive Substances and Irradiating Apparatus Regulations. All units examined were found to be adequately installed, and no unit previously examined showed signs of deterioration with an increase in radiation leakage from the source housing.

(c) *Radiation Protection, Queen Elizabeth Hospital*

Specifications were made available to the Public Buildings Department for X-ray protection in the construction of 12 new radiographic installations to be added to the Queen Elizabeth Hospital. The installations included orthopaedic radiography, tomography, fluoroscopic screening, vascular radiography and intravenous pyelography.

(d) *Industrial Radiography*

The layout designs and radiation protection for three new industrial radiography bays were completed by the Branch during the year. Two of these bays have subsequently been put into service and approved, the third bay is still under construction.

Advice has been given on the mode of transport of radio-active material, the use of radio-isotopes fluorescence analysers and the installation of a 2000 Ci Cobalt 60 radio-chemistry radiation source.

(ii) *Noise*

A further 38 noise surveys were completed during the year covering the following occupations: stone cutting, timber milling, concrete masonry works, spray painting, plastics moulding, meat works and wire fencing.

Some typical overall noise levels and associated octave band analyses recorded during the above investigations are shown in Appendix 10.

The noise produced during operation of the toy "M" Sonic Blaster Bazooka Gun was measured. The peak sound pressure level was found to be in excess of 130 dB. The toy was considered to possess a considerable health hazard potential, especially to the ear, and representations to both wholesalers and retailers resulted in its withdrawal from sale.

The Department was called upon to investigate six environmental noise complaints during the year, and from the reaction to all surveys completed it is apparent that people are more concerned about noise when they are at home, and indoors. Further, more people are disturbed by noise from external sources, for example, road traffic or air compressors, than by internal noise from radios or neighbours, or by the noise levels to which they may be exposed during work.

All environmental noise complaints were assessed using a simplified procedure published by the Building Research Station, Noise—Final Report, H.M.S.O. 1964.

(iii) *Dust*

(a) *Wood Dust in Technical High Schools and Woodcraft Centres*

As part of a general survey of the occupational exposure to wood dusts of operators of woodworking machinery, inspections were made of 13 technical high schools and woodcraft centres in the metropolitan area.

The inspections revealed that excessive dust concentrations occurred at all schools and centres, creating conditions which were potentially hazardous to the health of instructors and, to a lesser extent, students. Further, the air-borne dust was carried at times to rooms outside of the woodcraft areas, exposing other instructors and students and interfering with other activities, such as photography, spray painting, polishing, etc.

The dust was generated during machining operations carried out on both wood and acrylic materials. No mechanical extraction ventilation was installed at any school or centre. The rate of air change allowed by the windows was quite insufficient to control the dust pollution; in fact, this general ventilation tended to increase the problem by disseminating the dust to other parts of the buildings.

Specific recommendations to alleviate the potentially hazardous situations were forwarded to the Director General of Education.

(b) *Employee dust exposure in sample preparation room*

Gravimetric dust sampling in the breathing zone of employees grinding and sampling rock for analytical purposes was carried out using a Casella Gravimetric Dust Sampler. The average weight of sample was 2.0 mgms/1,000 litres of air, and the free silica content of the parent rock was found to vary between 10 and 50 per cent free silica.

Parallel samples taken with the thermal precipitator yielded an average dust concentration of 80 particles/cc. The maximum permissible particle concentration is 400 particles/cc. of air (National Health and Medical Research Council) and the correlated standard for the gravimetric samples, allowing for particle size distribution was found to be 9.4 mgms/1,000 litres of air.

Under normal working conditions the dust concentrations in the sample preparation room did not present a health hazard to the employees involved.

(c) *Silicosis Committee*

At the request of the Chairman, Silicosis Committee, inspections were carried out at three firms to assess the potential exposure of employees to silica dust. Depending on the variation in exposure time, it was recommended that any employee engaged on processes carried out without water or oil/water sprays should be considered to be exposed to the risk of silicosis from the inhalation of silica dust.

*Air Pollution Section*—Major activities were concerned with preparing and submitting for consideration by the Clean Air Committee proposals for Regulations under the Health Act for air pollution control.

In conjunction with the above, a closer study of objective air quality needs and criteria was initiated and pursued so that the proposed legislation could be better associated with environmental needs.

Technical advice was given to other departmental officers, officers of other departments, local boards of health, industry, equipment manufacturers and suppliers, the public and other interested parties. This advice was suited to particular inquiries made in relation to complaints or proposed control measures and followed whatever investigations were necessary.

Liaison was effected and maintained with Government authorities, technical bodies, public utilities, industry and industry groups, and all concerned in establishing and relating the many aspects of air pollution control.

In March a two-day visit to Port Pirie was made by Mr. Lilburn, accompanied by Dr. K. J. Wilson, to discuss specific problems in the area.

In late May and early June, Mr. Lilburn visited Sydney for four days to discuss specific control problems with the Air Pollution Control Branch, New South Wales Department of Public Health prior to attending the two-day 5th Technical Conference on Clean Air in Brisbane. This Conference was attended by senior air pollution control officers from throughout Australasia. Technical discussions took place and a paper "Suiting the Legislation to the Problem" was presented by Mr. Lilburn.

Some 44 requests for advice on possible clean air legislation requirements, present and prospective air pollution control requirements and equipment needs were received from all sources. Specific studies were made where necessary and the appropriate advice given.

A paper "The Technical Aspects of Clean Air" was prepared and presented by Mr. Lilburn to a meeting of the Institute of Fuel, South Australian membership, in May.

Continuing studies were made of local pollution and pollution potentials, air pollution control fundamentals and control equipment, leading to reports being made for the consideration of the Clean Air Committee or others concerned. A closer study of air quality standards which could be associated with control requirements was initiated.

The B.C.U.R.A. pattern isokinetic flue gas solids sampler previously ordered arrived in February.

The Clean Air Committee met six times during the year and considered in detail the report and proposed draft regulations prepared by the special sub-committee appointed for the purpose.

Sulphur dioxide and smoke density measurements were continued at eight Adelaide metropolitan stations and in three country areas during the year, except that the Fort Largs station was temporarily closed for six months while rebuilding operations were carried out. Sampling sites were not relocated during this period.

A sulphur dioxide monitor was set up within the Electricity Trust property as Osborne and operated from September, 1966, to February, 1967, inclusive. The object was to compare the results with those obtained by integrating instantaneous readings recorded by an automatic sampler operated by the Electricity Trust at the same site. Although a full comparison of the results could not be made due to occasional mechanical failure of the automatic instrument, it was considered that the instrument operated by this Department recorded slightly lower values.

The 1967 monthly averages and the corresponding highest daily readings for sulphur dioxide expressed as parts per hundred million, for smoke density expressed as Coefficient of Haze units, and for the eight metropolitan and three country stations are given in Appendices 11 and 12. Appendix 13 gives the results of examinations for particulate matter, as assessed by fall-out gauge sampling.

## 5. SCHOOL HEALTH

PRINCIPAL MEDICAL OFFICER—Dr. C. O. FULLER, M.B., B.S., D.P.H.

### (a) MEDICAL SECTION

During 1967 several medical officers were absent for all or part of the year due to illness, long service leave and overseas study leave. The appointment of temporary medical officers to cover these absences was not possible until the latter part of the year. As a result, only some 50 per cent of the annual and three-yearly programmes of school visits was completed.

*Examinations carried out for Education Department Schools*—The number of children examined in Education Department schools was 40,312. The Education Department school enrolment for 1967 was 217,034 (South Australian schools only; previous years figures have included Northern Territory schools). School doctors visited 282 schools. For details of examinations, see Appendices 14 and 15.

The defect rates given for 1967 in Appendix 15 do not provide a valid comparison with previous rates as only half the normal number of children were examined and only half the normal number of schools were visited during the year. Schools visited were deliberately selected from those areas where socio-economic and other factors could be expected to produce a higher percentage of defects. These schools also included a larger number of children seen for the first time and therefore appearing in the statistics for the first time. For this reason the rates are abnormally high and it is expected that in future years when a more representative total number of children are examined the rates will return to a level approximating the average of former years.

The parents of 31 children requested that their children be exempted from medical examinations.

*Examinations carried out by School Health Services staff at 169 Rundle Street, Adelaide*—

- (i) *Medical Examinations of school children seen previously at schools*—Children may be asked to attend head office for further assessment of a particular defect before being referred to their family doctor, hospital or eye specialist. Teachers and parents occasionally bring children to head office for advice and assessment of a particular problem. Two hundred and seventy-three children were seen for additional assessment.
- (ii) *Medical Examinations apart from school children*—Three thousand two hundred and sixty students entering or leaving the Teachers Colleges, or applying for Teaching Scholarships, Junior Teaching positions and Laboratory Assistantships were medically examined.

Teachers referred by the Education Department were seen before returning to duty from sick leave. Applications for invalidity pensions from teachers referred by the Education Department were considered and where necessary the applicants were examined. A total of 752 teachers were seen.

Nineteen children travelling interstate with cricket, basketball and football teams were medically examined.

The total number of examinations carried out at head office was 4,304.

*Health Education Lectures*—These were continued during 1967. Dr. C. O. Fuller spent one term in each Teachers College:—

1st Term—Western Teachers College, 6 lectures per week,

2nd Term—Adelaide Teachers College, 8 lectures per week,

3rd Term—Wattle Park Teachers College, 8 lectures per week,

and took part in the examinations.

Dr. Fuller continued lecturing on the Nurses Lecture Panel at the Royal Adelaide Hospital and the Adelaide Children's Hospital.

*Paediatric Refresher Week*—Permission was granted for medical officers to attend the refresher week at the Adelaide Children's Hospital.

*Mothers Clubs*—The demand for speakers continued and despite the shortage of medical officers, nine metropolitan and country mothers clubs, school committees or parents groups were addressed by Branch officers.

*Defect Notices*—Under an arrangement approved by the Australian Medical Association 2,202 forms S.H.S.5 (advice to parents of a defect) were returned by doctors and specialists to whom children were taken by parents indicating the action taken. Their co-operation is gratefully acknowledged as it enables this section to complete its records and follow the progress of these children.

S.H.S.5 forms returned:—

Metropolitan .....	1,400
Country .....	802
	<hr/>
	2,202
	<hr/>

*Infections in School Children*—Details of communicable diseases reported to teachers in State Schools are shown in Appendix 16. The total of communicable diseases reported was 8,371.

#### (b) DEAFNESS GUIDANCE CLINIC

The Deafness Guidance Clinic completed its ninth year with a total of 2,914 attendances.

New cases were referred from the following sources:—

	Per Cent
Officers of the School Health Service .....	81.8
Family Doctors .....	6.7
Parents .....	4.8
Others (Kindergarten Union, Teachers, Psychology Branch) .....	6.7

The liaison with the Education Department through the Advisory Panel for Deaf and Hard of Hearing Children has been maintained.

The monthly lists of all children discovered to have a significant loss have been continued and 278 were made the subject of specific letters. Of these 136 were discovered at the initial test.

In addition to children, tests were carried out on student teachers, scholarship applicants and public servants.

*Screen Testing in the Field*—Audiometric testing was conducted in Education Department and private schools, and pre-school kindergartens associated with the Kindergarten Union of South Australia Incorporated.

A total of 15,831 children had pure tone audiometer tests. Of these 639 were found to have some hearing loss at the time of testing. Parents were notified accordingly and, where possible, further testing was carried out in the Deafness Guidance Clinic.

Audiometers supplied and maintained by the Commonwealth Acoustic Laboratory were used for all field work.

*Appointments at Deafness Guidance Clinic*—To avoid patients overlooking appointments, reminder notices are sent.

The figures for New Cases, Retests and Disposal are given in Appendices 17 and 18.

#### (c) DENTAL SECTION

SUPERINTENDENT, SCHOOL DENTAL SERVICE—Mr. H. D. KENNARE, B.D.S.

The inauguration of the School for Dental Therapists with its objective of educating 16 students every year has separated the activities of the Dental Service into two distinct divisions:—

- (i) Education.
- (ii) Services.

The work of these two divisions is reported separately.

##### (i) Education Division

*Staff*—Mr. I. A. Stead, B.D.S., assumed temporary control of the School as Senior Tutor Dental Officer until he was joined in March by the newly appointed Superintendent of the Service and Sister C. J. Murphy, a Tutor Sister on loan from the New Zealand Division of Dental Health for a period of two and a half years. Mrs. Sinclair, a former dental nurse from Christchurch, New Zealand, worked from the beginning as a technical assistant.

*Students*—Sixteen student dental therapists (Group Number 1) commenced study on 13th February under the guidance and tuition of Mr. Stead.

*Academic Report*—Satisfactory progress was made by the students in every subject except Operative Dentistry Techniques. This section of the programme was delayed for more than three months by the late delivery of equipment from overseas. Some lost ground was recovered by the end of the year.

The results of the Primary Examinations held at the conclusion of the first six months were:—

- Eight students passed with credit,
- Eight students obtained ordinary passes.

The results of the Intermediate Examinations held at the conclusion of the first year were:—

- Two students passed with distinction,
- Five students passed with credit,
- Eight students obtained ordinary passes,
- One student passed after examination by supplementary papers in two subjects (Preventive Dentistry and Dental Pathology).

*The Curriculum*—Considerable assistance in the form of lecture notes was received from the New Zealand Division of Dental Health, but differences in operating equipment, restorative materials and attitudes in Australia made it necessary for substantial modification to notes on most aspects of applied dentistry.

The major objective of the service is to prevent dental disease, and to establish this ideal in the minds of the dental therapists from the outset a special series of lectures in Preventive Dentistry was prepared. This series integrates the preventive aspects of every subject in the curriculum.

*Dental Health Education*—The Senior Tutor Dental Officer delivered lectures in Dental Health Education to the students at the Teachers' Colleges:—

Wattle Park Teachers' College—8 lectures.

Western Teachers' College—12 lectures.

*Dental Health Education Workshop*—A workshop organized by the Australian Dental Association was held in Canberra in August. The Superintendent attended as the Reporter of the committee which considered "The Role of Government Agencies, Dentists and Auxiliaries, and their Potential in Relation to Dental Health Education." The Director General of Public Health, Dr. P. S. Woodruff, assisted the same committee in its decisions, and the Senior Field Dental Officer contributed to the work of the committee which considered "Motivation to Change Dental Health Habits." The findings of the Workshop stated clearly the important role that School Dental Services must fill in the prevention of dental disease through the education of children.

*Visit to New Zealand*—Mr. H. Kennare visited New Zealand from 23rd April to 30th May, 1967. He observed the facilities and teaching methods at the schools for dental nurses in Wellington, Auckland and Christchurch, and also inspected many clinics. He discussed School Dental Service policy and administration with members of the Directorate of the Division of Dental Health in New Zealand, and the evaluation of dental care programmes with the Associate Professor and staff in the Department of Preventive Dentistry, University of Otago, Dunedin.

*Education Department Co-operation*—Appreciation is due to the Director-General of Education and his staff for their co-operation and assistance in the preparation of plans for our work in 1968. Plans were made for:—

- (1) Children from primary and infant schools to attend the School for Dental Therapists as patients.
- (2) The construction of static dental clinics in Education Department primary schools in 1968-69.
- (3) The physical training for student dental therapists in the gymnasium at the Adelaide Teachers' College.

(4) A course of study in Human Relations, prepared by the staff at the Adelaide Teachers' College, and undertaken by our students during the first term of the second year. The curriculum includes the following subjects:—

Methodology of Teaching.

Psychology.

Communications.

*Building*—Plans for the alterations and additions to the School building required in Stage 2 of the overall plan were completed during April, and the estimations and approval for work to commence were obtained during the latter half of the year.

*Equipment and Mechanical Services*—The type of equipment and the mechanical services for the clinic at the School were selected in April and specifications for its assembly and installation were drawn up by September. Tenders were called and contracts let by the close of December.

The Kavo bench type dental engines were delivered in September and proved to be most satisfactory. The Gritter portable air turbine units have also given good service with only minor problems. The Planet laboratory lights are providing adequate working conditions, after some early modifications to the wiring.

## (ii) *Field Service Division*

In February, Mr. K. Arula was appointed Senior Field Dental Officer. The dentists in this division numbered 11 at the beginning of the year, and another dentist commenced duty in February. During the year four officers left the service on transfer, resignation or on leave. In December four recently graduated studentship holders joined the Department.

The number of studentships awarded remained stationary at 15.

*Regions Treated or Part-treated during the year*—

West Coast 1 (Streaky Bay-Lock)

West Coast 2 (Iron Knob-Elliston)

Far North (Leigh Creek)

Northern (Quorn-Hawker)

Peterborough and Broken Hill Line

Murray Mallee 1 (Pinnaroo-Lameroo)

Murray Mallee 2 (Brown's Well-East Murray)

Kangaroo Island

*Summary of Work Carried Out in Country Schools*—

Number of children offered treatment .....	3,886
Number of children accepted treatment.....	3,547
Number of children examined .....	3,785
Visits for treatment .....	11,899
Fillings.....	17,410
Extractions .....	1,709
Other treatments .....	7,547
Number of children for whom treatment was completed .....	2,992
Number of schools visited .....	35

Children in primary grades were offered comprehensive treatment.

The overall treatment acceptance figure increased from 87.2 per cent to 91.3 per cent. This is the highest acceptance figure since records have been kept.

Average treatments required per country school child were as follows:—

Fillings.....	4.9
Extractions .....	0.5
Other treatments .....	2.1

*Summary of Emergency Treatments*—An emergency service was again offered to pre-school children, secondary school children and adults.

Visits for treatment .....	515
Fillings.....	138
Extractions .....	342
Other treatments .....	398

*Social Welfare Institutions*—Dental Officers provided treatment to children in Social Welfare institutions during the school vacations. The Senior Field Dental Officer worked in the same institutions on a part-time basis throughout the year. Institutions where children were treated were:—

McNally Training Centre  
Glandore Boys' Home  
Lochiel Park Boys' Training Centre  
Brookway Park  
Seaforth Children's Home  
Vaughan House

*Summary of Work Done in these Institutions*—

Examinations .....	558
Fillings.....	1,592
Extractions .....	133
Other treatments .....	596
Visits for treatment .....	1,042
Children completed .....	136

## 6. EPIDEMIOLOGY

PRINCIPAL MEDICAL OFFICER—Dr. B. H. JEANES, M.B., B.S., D.P.H.

1967 saw two major changes in the Poliomyelitis Campaign. In July, Sabin Oral Poliomyelitis vaccine was introduced for use by health authorities in South Australia, and in November a Departmental reorganization incorporated the Poliomyelitis Branch as a section of the Epidemiology Branch.

The introduction of the oral vaccine gave a stimulus to the activities of the branch, although the total amount of immunizing did not rise. For the past three years, the number of injections given in South Australia has been falling steadily, although remaining above the critical level at which the number of non-immunized people in the community would begin to increase.

There were no reactions considered due to either Salk or Sabin vaccine reported to the Department. Immunization given by various authorities is tabulated in Appendices 19, 20 and 21.

*Introduction of Sabin Vaccine*—Following the success of the trials in Tasmania in 1964, the Commonwealth Government announced in 1966 that it would make Sabin Oral Poliomyelitis vaccine available to the States for use by Public Health authorities. This new vaccine had many advantages. Being given by mouth it was easier and cheaper to administer, and the anticipation of an injection was no longer necessary. It was at least as safe and effective as Salk and immunization could be started earlier in life and completed in a shorter time than with Salk. The vaccine costs about one-tenth the price of Salk, and the method of production meant that periodic shortages which had occurred in the past with Salk need no longer be expected.

All local boards of health agreed to use the new vaccine, and its introduction was preceded by a visit to each board to familiarize them with the technical details of the vaccine and the modification of administrative procedure. The latter was kept to a minimum so that the system already operating with Salk could be maintained as far as possible, to avoid confusion.

The changeover was made very successfully and a great deal of credit must go to local boards for their keenness to ensure the success of the changeover and for stepping up their own activities to keep pace with the increased demand for immunization. This increase was due partly to a backlog provoked by the anticipation of Sabin vaccine, and also to an increased acceptance, mainly by adults who had previously refused Salk vaccine, presumably because of the injection. The different regime meant that about 5,000 newly born children, who could have been ineligible for Salk because of age, were immediately included. The only significant problem was wastage which was unavoidable with the twenty-dose pack, and was not as serious as it would have been with Salk because of the difference in cost.

Since the changeover there have been two laboratory reports of poliomyelitis virus, in each instance found in the faeces of a patient under investigation. In neither case was the illness a poliomyelitis-like disease and investigation showed that in both cases, although the children concerned had not received oral vaccine, they were household contacts of children who had, and the inference was that the vaccine had been passed on to them.

*Poliomyelitis Services*—For a period of about two months, while the nursing staff were becoming familiar with the oral vaccine, and later visiting local boards, immunization at the clinics had to be curtailed. It would also not have been desirable to continue using Salk vaccine right up to the time of the changeover. The Queen Victoria Maternity Hospital was unwilling to use the live virus vaccine, and the clinic there has been suspended for the time being. Three hundred and eighteen injections of Salk vaccine were given at this institution for the year. Six thousand eight hundred and fourteen doses of Sabin were administered at the Adelaide Children's Hospital by officers of this Department. Immunization in various institutions and Government Departments, including the Group Laundry and Central Linen Services was also continued.

A summary of the injections other than poliomyelitis vaccine given at these centres is as follows:—

Immunizing Agents	Number of Injections and Vaccinations		
	Norwood	Adelaide Children's Hospital	Group Laundry
Triple Antigen .....	602	328	—
C.D.T. ....	104	164	—
Tetanus Toxoid .....	192	88	236
Smallpox .....	80	—	68
Influenza.....	—	—	232
Total .....	978	580	536

Of particular note is the number of smallpox vaccinations done at Norwood. An increasing number of people are requesting this as a routine procedure for themselves and their children, and these have been carried out without any undue morbidity being reported.

Although country trips have been made as in previous years, the total number of immunizations with all types of vaccine other than smallpox was considerably less than in 1966. This is mainly because the regular visits have now reduced the number requiring immunization, while the increase in smallpox vaccination reflects the great acceptance of this procedure.

*Local Boards of Health*—In the last six months of 1967, Sabin vaccine was introduced, and Salk vaccine phased out. By the end of 1967, only Sabin vaccine was available to local boards. During this period the amount of immunization undertaken by the local boards rose considerably, for reasons mentioned before, and also because two doses of Sabin were necessary as a substitute for a single dose of Salk vaccine when given as a booster. It is most probable that the rate of immunization will drop to a lower level early in 1968.

A summary of the number of immunizations carried out by the various local boards is given in Appendix 22.

*Private Doctors*—At this stage, Sabin vaccine has not yet been released to privately practising doctors, although there have been a few expressing interest and making inquiries as to when it would be available. The package size makes it impracticable for most doctors to use the vaccine economically, but attempts are being made to obtain smaller packs so that an early release can be made. The advantages to the recipient of oral vaccine have resulted in a swing away from private doctor immunizing, and the number of vaccinations has fallen to 24,744 compared with 27,810 in 1966. Early release to private doctors would reverse this trend, which if it continued could also be reflected in triple antigen immunization shifting from the doctors to local boards.

*Special Groups*—With the exception of the larger groups, such as Weapons Research Hospital in Woomera and the University Health Services, many of the groups have been unable to economically use oral vaccine and their activities were correspondingly restricted. However, these groups have not been denied vaccine purely on these grounds and increased wastage has had to be accepted as unavoidable. Some have re-organized their immunizing procedures to be able to use the new vaccine with the minimum of waste but in others this has not been possible and they have suspended their operations, with the result that the total immunizations have fallen to 3,543 compared with 3,951 in 1966.

*Position at the End of 1967*—After four years without any cases of poliomyelitis and the advent of the Epidemiology Branch, the future of the Poliomyelitis Services requires serious consideration. The distribution of vaccine will have to be continued as in the past, although the total demand will probably fall in the fairly near future. A total of 60,000 to 70,000 doses will be all that is necessary to immunize babies born each year and if, as is held by some authorities, the immunity produced by Sabin vaccine is life-long, there will be no need for periodic boosters. The demands made for personal records will also fall and consideration will have to be given as to whether it is desirable or necessary to keep the central record operating.

The development of an Epidemiology Branch will mean that less emphasis will be placed on poliomyelitis immunization as a separate procedure, and more attention paid to immunization as a whole, possibly with the introduction of new immunizing agents against rubella and measles. The search for a vaccine against hepatitis continues, although at this stage with no success.

7. TUBERCULOSIS

DIRECTOR OF TUBERCULOSIS—Dr. T. G. PAXON, M.D., M.R.C.P.

In 1965 a review of the tuberculosis statistics was presented. This year a study in greater detail of the figures over the past five years revealed some important points.

Appendix 23—

- (1) *Primary Infection*—Fourteen cases were notified in 1963 and seven in 1967. No cases were notified in 1965. During the five year period several cases of segmental collapse have occurred, necessitating bronchoscopy. In some cases the bronchus was eroded and blocked by caseous material; such children must be regarded as highly infectious and it is the practice to nurse them in cubicles at the Adelaide Children's Hospital.
- (2) *Pleural Effusion*—This appears to be a steadily diminishing disease. There were 11 cases in 1963 and only one last year.
- (3) *Pulmonary Disease*—In 1963, 108 new male cases were notified and 71 in 1967. The latter figure, compared with the 1966 figure of 64 cases, shows an increase of 10 per cent. Similarly with women, in 1963 there were 56 cases and in 1966, 30. The figure however has risen to 41 in 1967, representing an increase of 30 per cent on the 1966 figure. Further comment on this increase is made later.
- (4) *Male/Female Ratio*—Thirty-four per cent of the cases notified in 1963 were women, 26 per cent in 1964, 27 per cent in 1965, 32 per cent in 1966 and this year 37 per cent.

(5) *Non Pulmonary Disease*—This appears to be declining at about the same rate of pulmonary disease. Fifteen per cent of the total new cases in 1963 were non pulmonary forms of the disease and the figure for 1967 was also 15 per cent. Renal tuberculosis is still an important disease and provided it is diagnosed early enough, responds well to chemotherapy. Unfortunately, however, frequent considerable damage is done to the lower end of the ureter and by the time the diagnosis is made, transplantation of the ureter and sometimes nephroureterectomy is required. The diagnosis of renal tuberculosis is difficult and unless the disease is borne in mind it tends to be overlooked. Usually there is mild dysuria of some months duration and if cultures of the urine for acid fast bacilli and intravenous pyelography were considered earlier, there would be less delay in diagnosis.

(6) *Morbidity Rates*—For pulmonary disease, the figure was 11 per 100,000.

*Appendix 24—Migrants*—The occurrence of the disease is decreasing more rapidly in the Australian born than in migrants. This could be expected as most migrants have come from heavily infected populations. In 1963, 22 per cent of cases occurred in migrants and in 1967 the figure was 31.2 per cent.

*Appendix 25—Age Distribution*—Until 1965 the maximum number of cases occurred in the 40 to 50 age groups. It is shifting to periods later on in life.

*Appendix 26—Mass Radiography*—The rates for active disease were 0.2 per thousand in 1963 for the metropolitan area and 0.13 per thousand in 1967. The rates for inactive disease per thousand varied due to discrepancies in reporting and recording. The films of about 1 in 200 persons show evidence of inactive post primary disease. Further comments on this important group are made later.

A recent calculation of the cost of producing a report on a mass miniature film revealed a figure of 88 cents per film.

Until 1965 about 150,000 persons were X-rayed per annum in the metropolitan and country areas. In 1967 the figure was 78,033 for both metropolitan and country areas, indicating the slowing down of the mass radiography programme. This has been reduced because of the low yield of active cases now being obtained.

*Appendix 27—Work of the City X-ray Unit—*

(1) *Contact Examination*—This tends to be disappointing. The number of contacts examined per year is usually about 2,000. Two active cases were found last year. This is in accord with the usual yield of about one to two per thousand contacts examined.

(2) *Doctors Referrals*—The number of persons referred by doctors over the last five years has been consistent, at about 5,500 per annum. The rate of case finding was similar to that in contact examination that is about 10 times that of the general population. Further comment about this group is made later.

(3) *Migrants*—In spite of the fact that most migrants are screened before coming, nevertheless the amount of disease discovered approximates that in the general population. Mass surveys in 1965 revealed 0.22 active cases per thousand. Ten thousand new migrants were X-rayed in the same year and 0.3 cases per thousand were discovered. In 1963 in the general population the active case rate was 0.2 per thousand and in the new migrants (5,639) the active case rate was also 0.2 per thousand. Last year the figure amongst the migrants had risen to 0.3 per thousand and had fallen in the general population to 0.13 per thousand.

The new Commonwealth Regulation requiring a British full fare paying passenger over 12 years of age to produce evidence on arrival of freedom from active pulmonary tuberculosis will come into operation on 1st August, 1968. This will mean that ALL migrants will have been screened before entering Australia for long term residence. Consideration will now be given to rescinding the local requirement of an X-ray within a month of arrival for all migrants.

(4) *Pensioners*—The Department of Social Services has in the past informed the Tuberculosis Services of all new age and invalid pensioners, who were then invited to attend for X-ray. The yield of active cases however is now so low that a recent communication from the Commonwealth Director General of Health advised that this group no longer requires special attention. In future they will be covered by the ordinary compulsory surveys.

(5) *Volunteers*—Six thousand seven hundred and eighty-four volunteers were X-rayed last year. This figure has gradually been increasing during the five year period. In 1963 it was 5,256. The rate of annual case finding is about three to four times that of the general population.

(6) *University Students*—Every year some 1,500 are X-rayed. There is virtually no disease in this group.

(7) *Positive Mantoux at School*—Children in grades VII and I at the primary schools of the metropolitan area are skin tested annually. Usually one or two per thousand are found with primary disease.

(8) *Inactive at previous Surveys*—This is the most rewarding group of patients to follow. It is the highest "risk group". It comprises those persons whose X-rays show evidence of healed post primary disease, of which they may or may not be aware.

Follow-up of this group produces a consistently high active case yield—about 25 times that of the general population.

One thousand three hundred persons were X-rayed last year and active disease develops in this group at the rate of 1 in 300 per annum.

In South Australia there are some 240,000 persons over the age of 50. Assuming 50 per cent of these live within reasonable distance of the City X-ray unit, that five per thousand have scars and that they have been known for five years, then if such persons attend annually some 3,000 should be X-rayed. In point of fact, in 1967 1,300 were X-rayed. Many people object to yearly X-rays when they feel perfectly well, but the fact that 1,300 attended indicates a very good measure of public support.

*Appendix 28—Percentage of Annual Positive Reactors*—Figures given in this table relate to routine tuberculin tests using 0.1 ml. of 1 in 1,000 old tuberculin "C" strength. On account of the small numbers tested in the groups other than 5-9 and 10-14, it is difficult to draw positive conclusions from the percentages shown. However, the age groups 5-9 and 10-14 each contain some 10,000 to 15,000 children and are very accurate. The decline in the percentage of the positive reactors seems most satisfactory in the 10-14 group. In 1963, 4 per cent were positive and the figure had fallen to 1.8 per cent in 1967.

The World Health Organization laid down that tuberculosis could be considered under control when 1 per cent of children at age 14 were natural positive reactors. We are not far off this figure. The figure given relates to all children including migrants; that for Australian born children would be lower. In point of fact, of 9,551 Australian born children aged 10-14, 1.16 per cent were positive reactors; of 2,367 migrant children, 3.38 per cent were positive reactors. Of all the positive reactors in the 10-14 age group, 42 per cent were in migrants.

*Appendix 29—Analysis of Diseases Discovered by 70 m.m. Radiography*—It should be borne in mind that this table refers to the cases discovered by—

State X-ray Health Surveys.

Doctors' Referrals.

Contacts and other groups, such as migrants, etc.

Three hundred and forty-four cases were referred for further investigation. In 40 cases, active tuberculosis was found. In 50 cases pulmonary malignancy was discovered, although in nine cases the disease was not proven histologically.

It is the practice in South Australia when, as a result of 70 m.m. radiography, further investigations are recommended, to refer in the first place the patient to his private practitioner; patients are always requested to give their doctors names when they attend for X-ray.

Of the 344 patients on whom further investigations were advised, 144 did not give a doctor's name and of the others all but 54 were referred back to the clinic. Of these 54, 10 elected the advice of private consultants and 44 remained under the care of their private practitioners.

*Cancer*—Malignant disease of the lung is now commoner than tuberculosis. The mass radiography surveys disclosed malignancy in 20 men, in whom secondary deposits were present in five. Four cases were discovered in women, of which three were due to secondaries. About one person in every 3,500 X-rayed was suffering from some form of pulmonary carcinoma, as against one in 7,000 suffering from pulmonary tuberculosis.

When the age distribution of the survey carcinoma cases was analysed, only one man under the age of 55 was found with a primary carcinoma and only three in the decade 55-64. The bulk of the cases, 15 out of 20, occurred in men over the age of 65 and six occurred in those 75 and over.

With reference to patients referred by doctors for routine radiography on account of respiratory symptoms, 5,662 persons were X-rayed. Seventeen of the men were suffering from primary carcinoma. No secondary forms were found. There were five cases in women, of which two were suffering from secondary deposits. Thus about one person in 250 was suffering from a growth and one in 800 from tuberculosis. If general practitioners refer patients for routine radiography, about one in 180 will be suffering from either carcinoma or tuberculosis.

*Appendix 30* gives details of notifications of tuberculosis for the year ended 31st December, 1967, showing age, sex and stage of disease.

*Appendix 31* shows details of reactivated cases of tuberculosis.

*Appendix 32* records deaths from tuberculosis (all forms).

*Appendix 33* shows notifications of tuberculosis in local board of health areas.

## 8. SUMMARY AND CONCLUSIONS

The activities of the Department have been recorded in detail in the foregoing sections and comments have been made on matters of considerable interest and importance.

In the area of communicable disease it is notable that for the fourth year in succession no notification of poliomyelitis was received. It is also of interest that no cases of diphtheria were notified during the year.

On the other hand, the number of cases notified on gonorrhoea and syphilis continues to increase. However it is still too early to accurately determine trends in this connection, as this is only the second full year that these diseases have been notifiable.

Although the rate of immunization generally has continued at a satisfactory level, there is a constant need to combat any feeling of complacency amongst the general public which the absence of an epidemic can engender.

It is gratifying to note that the two day Public Health Conference held in September was well supported by members and officers of local boards as well as others interested in public health. It is proposed that these conferences be continued every second year.

The increasing number of installations of common effluent drains in country towns and near metropolitan areas is meeting an urgent need in improving the sanitary conditions of the areas concerned. With the steadily increasing number of septic tanks being installed in areas where sewers are not available, a continuing and increasing demand for advice and assistance of officers of this Department in this connection can be anticipated.

The steadily increasing interest being displayed in the field of occupational health by both employer and employee groups in industry is reflected by the greater demands being made on officers of the Department. This especially applies in the field of hearing conservation.

Apart from the expected increase in activity in the School Health Branch due to the steady increase in school population, the main advance has been the introduction of training of School Dental Therapists. Although it will be several years before the effect of the increased forces available for field work will be felt, it is hoped that the introduction of this scheme will be the means of effecting an appreciable improvement in the dental health of school children in this State.

It is significant that it has been possible to reduce the frequency of mass X-rays throughout the State. This is a reflection on the progress being made in the control of tuberculosis.

The Central Board of Health desires to express its thanks to local boards of health, its own officers, and the staff of the Department of Public Health, for their efforts and co-operation throughout the year. The continued valued assistance of other Government Departments and the Institute of Medical and Veterinary Science is also appreciated.

The Board also wishes to thank the Honourable A. J. Shard, who was the Minister of Health during the year under review, for his continued support, and to offer to you Sir, the good wishes of the Board in your term as Minister.

P. S. WOODRUFF, Chairman.

H. J. N. HODGSON,

G. H. McQUEEN

C. COLMAN,

A. BERTRAM COX.

} Members

R. W. LAVER, Secretary.

Adelaide, 14th October, 1969.

APPENDIX 1—INFANT DEATHS IN THE FIRST YEAR OF LIFE: MAIN CAUSES, SOUTH AUSTRALIA 1963 TO 1967

Cause	1963	1964	1965	1966	1967
	No.	No.	No.	No.	No.
Diarrhoea.....	15	9	12	10	8
Congenital malformations.....	91	79	82	84	80
Prematurity.....	72	82	67	57	50
Injury at birth.....	41	38	35	41	33
Post-natal asphyxia and atelectasis.....	36	58	38	20	26
Other diseases peculiar to early infancy.....	63	41	73	74	79
Cerebro-spinal meningitis.....	1	2	—	2	—
Meningitis.....	—	3	4	2	7
Whooping cough.....	1	1	—	1	—
Pneumonia.....	42	37	39	28	24
Hernia and intestinal obstruction.....	6	6	4	1	1
External causes.....	9	14	14	10	12
All other causes.....	22	27	17	26	26
Total.....	399	397	385	356	346

APPENDIX 2—BIRTHS, MARRIAGES AND DEATHS: NUMBERS REGISTERED AND RATES 1963 TO 1967

Period	Births Registered		Marriages		Deaths Registered			
					Total		Infants	
Year	No.	Rate (a)	No.	Rate (a)	No.	Rate (a)	No.	Rate (b)
1963.....	21,367	21.20	7,302	7.24	8,201	8.14	399	18.67
1964.....	20,866	20.16	7,765	7.50	8,906	8.61	397	19.03
1965.....	20,891	19.63	8,680	8.16	8,788	8.26	385	18.43
1966.....	20,319	18.62	9,051	8.29	9,323	8.54	356	17.52
1967.....	20,386	18.34 (p)	9,434	8.49 (p)	9,071	8.16 (p)	346	16.97

(a) Per 1,000 of Mean Population.  
(b) Per 1,000 live births registered.  
(p) Partly estimated.

APPENDIX 3—INFECTIOUS AND NOTIFIABLE DISEASES, NOTIFIED TO THE CENTRAL BOARD OF HEALTH

	Cases			Deaths		
	1965	1966	1967	1965	1966	1967
<i>Infectious Diseases</i>						
Acute infective encephalitis.....	1	2	7	2	—	—
Amoebiasis.....	—	—	—	1	—	—
Diarrhoea, infantile infective.....	13	2	12	—	—	—
Diphtheria.....	1	—	—	—	—	—
Dysentery, bacillary.....	178	135	92	—	—	—
Leptospirosis.....	1	1	1	—	—	—
Malaria—not locally acquired.....	3	1	1	—	—	—
Meningococcal infection.....	4	6	5	—	1	—
Paratyphoid fever.....	3	—	—	—	—	—
Puerperal pyrexia.....	4	1	1	—	—	—
Salmonella infection.....	127	120	110	—	—	1
Scarlet fever.....	127	57	70	—	—	—
Trachoma.....	—	1	—	—	—	—
Tuberculosis, pulmonary.....	126	106	120	6	12	15
Tuberculosis, other forms.....	30	25	23	1	1	1
Typhoid fever.....	1	1	1	—	—	—
<i>Notifiable Diseases</i>						
Acute rheumatism.....	1	8	—	—	—	—
Brucellosis.....	—	1	3	—	—	—
Chorea.....	—	—	1	—	—	—
Erythema nodosum.....	3	3	8	—	—	—
Encephalitis, following another disease.....	5	7	13	—	—	—
Gonorrhoea.....	4	256	399	—	—	—
Hydatid disease.....	1	—	—	—	—	—
Infective hapatitis.....	414	978	1,299	2	—	3
Lead Poisoning.....	—	—	1	—	—	—
Ophthalmia.....	2	3	13	—	—	—
Rubella.....	649	226	969	—	—	—
Syphilis.....	—	7	21	—	—	—
Tetanus.....	6	—	1	3	—	2

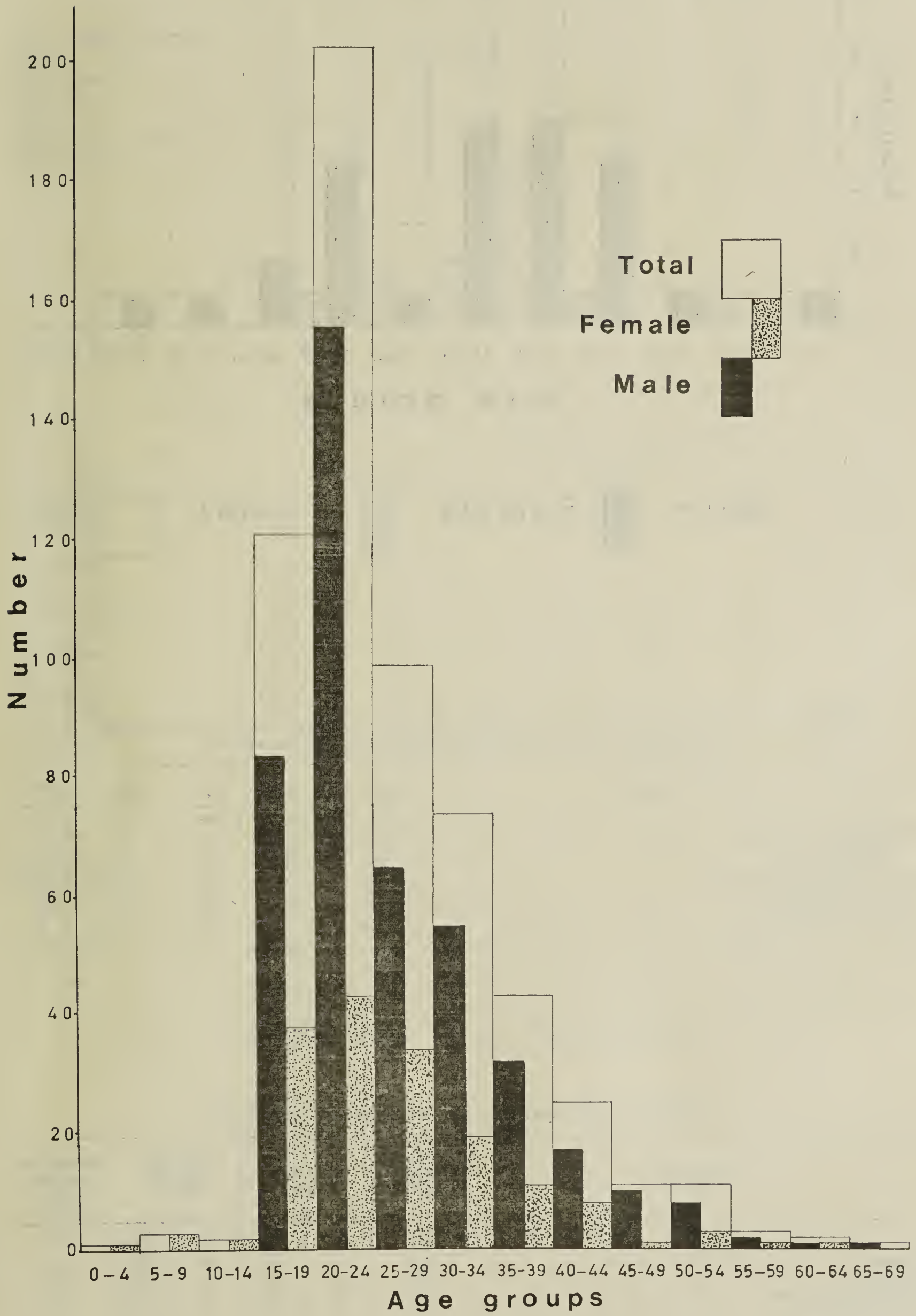
APPENDIX 4—STATISTICAL INFORMATION RELATING TO GONORRHOEA AND SYPHILIS  
(Total number of proved cases of Gonorrhoea and Syphilis during 1967 was 640.)

	Males		Females		Total
	No.	Per Cent	No.	Per Cent	No.
Suffering from— Gonorrhoea .....	430	67.2	169	26.4	599
Syphilis .....	29	4.5	12	1.9	41
(Combined Gonorrhoea and Syphilis was notified in the cases of two females.)					
Single and suffering from Gonorrhoea .....	346	54.1	88	13.8	434
Married and suffering from Gonorrhoea .....	64	10.0	62	9.6	126
Separated and suffering from Gonorrhoea .....	15	2.33	10	1.6	25
Divorced and suffering from Gonorrhoea .....	4	0.62	9	1.4	13
Widowed and suffering from Gonorrhoea .....	1	0.15	—	—	1
Single and suffering from Syphilis .....	25	3.9	7	1.1	32
Married and suffering from Syphilis .....	2	0.3	5	0.8	7
Separated and suffering from Syphilis.....	1	0.15	—	—	1
Divorced and suffering from Syphilis .....	1	0.15	—	—	1
Probably infected by spouse with Gonorrhoea .....	6	—	34	—	40
Probably infected by spouse with Syphilis .....	—	—	2	—	2

APPENDIX 5—SOURCES OF GONORRHOEA AND SYPHILIS INFORMATION

Sources	Gonorrhoea	Syphilis	Total	Per Cent
General Practitioners—				
Males .....	244	19	263	41.1
Females .....	99	5	104	16.3
Clinics—				
Males .....	146	3	149	23.25
Females .....	24	—	24	3.75
Hospitals (including ante-natal clinics and outpatient departments)—				
Males .....	13	4	17	2.66
Females .....	42	4	46	7.19
Red Cross Blood Transfusion Service—				
Males .....	—	3	3	0.45
Females .....	—	1	1	0.15
Armed Services—Males .....	15	—	15	2.35
Prisons Department—				
Males .....	12	—	12	1.9
Females .....	4	2	6	0.9
Totals .....	599	41	640	100.0

APPENDIX 6—PREVALENCE OF GONORRHOEA IN SOUTH AUSTRALIA 1967



APPENDIX 7—PREVALENCE OF SYPHILIS IN SOUTH AUSTRALIA 1967



APPENDIX 8—NUMBER OF LICENCES AND REGISTRATIONS GRANTED UNDER THE RADIOACTIVE SUBSTANCES AND IRRADIATING APPARATUS REGULATIONS

Type of Application	1963	1964	1965	1966	1967
	No.	No.	No.	No.	No.
Registration of apparatus—					
First unit . . . . .	322	285	329	341	353
Additional units . . . . .	112	149	167	186	178
Use of apparatus (new licences) . . . . .	380	234	157	118	99
Sale, etc., of apparatus . . . . .	2	4	5	5	5
Use of radioisotopes . . . . .	118	163	220	254	302
Sale, etc., of radioisotopes . . . . .	6	4	3	4	4

APPENDIX 9—DISTRIBUTION OF IRRADIATION APPARATUS

Classification	Total Number of Units	Units with L.B.D.		Units with less than 2 mm. Al.		Centres not registered with C.X.R.L.
	No.	No.	Per Cent	No.	Per Cent	
Dentists . . . . .	171	1	0.5	15	8.7	41
Hospitals . . . . .	153	87	56.9	64	41.8	51
Medical Practitioners . . . . .	98	30	30.6	43	43.8	37
Chiropractors . . . . .	12	4	33.3	1	8.3	4
Veterinary Surgeons . . . . .	5	—	—	5	100.0	3

APPENDIX 10—TYPICAL OVERALL NOISE LEVELS AND ASSOCIATED OCTAVE BAND ANALYSES RECORDED DURING INVESTIGATIONS

Noise Source	Overall S.P.L.	Midfrequency of Octave Band (cps).								N.R.N.
		62.5	125	250	500	1,000	2,000	4,000	8,000	
Spray Painting Booth .....	93	85	87	85	81	78	76	71	68	79
Rotary Oil Furnace .....	80	72	67	68	68	66	78	76	72	80
Beef Hall .....	87	75	77	79	79	77	78	72	67	80
Fencing Machine .....	102	76	77	77	80	85	90	99	90	92
Bench Saw .....	104	70	80	84	88	92	94	100	92	96
Docking Saw .....	110	80	80	90	94	98	100	110	102	102
Flint Saw .....	104	72	82	86	90	92	94	102	96	96
Concrete Block Machine .....	112	90	92	104	106	106	104	106	98	106
Plastic Pulveriser .....	104	88	95	102	100	97	98	92	87	100
Stone Saw .....	101	70	78	80	85	89	97	98	93	100

APPENDIX 11—AIR POLLUTION—SULPHUR DIOXIDE CONCENTRATIONS, 1967

Site		Parts per One Hundred Million											
		Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Adelaide Metropolitan Area—													
Thebarton .....	Ave.	1.1	1.9	1.5	1.4	1.3	0.6	0.4	0.5	0.5	1.3	1.0	1.7
	H.D.	4.1	16.1	6.0	4.0	5.1	2.2	1.8	1.6	2.4	5.0	1.7	14.8
Fort Largs .....	Ave.	3.0	1.9	1.3	—	—	—	—	—	—	2.0	1.6	2.8
	H.D.	11.4	12.2	3.7	—	—	—	—	—	—	5.0	3.7	10.8
Woodville North .....	Ave.	0.9	1.3	1.1	1.8	1.0	0.4	0.5	0.4	0.8	0.6	0.9	1.4
	H.D.	2.4	4.0	4.4	6.0	6.4	2.0	2.2	1.6	2.4	1.5	3.2	8.9
Richmond .....	Ave.	1.0	1.4	1.8	1.3	2.1	1.1	0.9	1.9	0.8	0.7	1.7	1.4
	H.D.	6.5	3.8	5.0	2.8	7.6	3.1	2.2	11.7	2.6	2.3	6.7	5.2
Birkenhead .....	Ave.	1.0	1.8	0.7	1.5	0.8	0.9	0.3	0.3	0.4	0.5	2.6	0.6
	H.D.	5.6	7.9	4.1	12.7	4.3	2.7	1.7	2.2	1.8	2.3	12.4	2.3
Rosewater .....	Ave.	1.8	1.7	2.3	1.5	1.5	1.0	0.8	0.3	0.6	0.4	1.2	1.7
	H.D.	5.2	6.8	10.4	6.2	4.2	2.3	2.3	1.2	1.7	1.4	3.4	5.3
West Terrace.....	Ave.	1.3	2.6	2.1	2.5	2.2	1.7	1.5	0.9	1.1	2.0	2.2	2.2
	H.D.	3.0	13.8	5.6	6.1	6.0	2.6	4.0	3.4	2.3	7.0	5.1	6.1
Hindmarsh .....	Ave.	1.0	2.6	1.3	1.5	1.5	1.2	0.6	0.5	1.0	1.0	1.3	1.3
	H.D.	2.7	16.9	3.3	5.5	6.9	3.1	2.2	2.4	3.6	7.5	3.0	6.0
Country Areas—													
Port Augusta West .....	Ave.	2.4	2.5	1.4	1.1	1.0	1.4	1.4	1.0	1.0	2.0	3.0	1.9
	H.D.	6.4	5.0	3.6	2.1	3.4	3.0	8.6	2.4	3.5	5.6	6.0	4.1
Port Augusta .....	Ave.	3.7	2.3	2.3	2.2	1.9	2.3	1.4	1.1	1.2	2.0	3.9	3.6
	H.D.	13.4	5.0	5.1	5.6	6.6	6.2	3.2	3.2	3.9	3.8	8.0	7.9
Port Pirie .....	Ave.	2.6	1.6	1.7	1.9	3.0	0.4	2.6	1.1	1.5	2.0	2.5	1.2
	H.D.	10.0	4.0	10.4	8.9	12.3	3.6	13.5	7.6	8.0	9.6	29.8	6.4

Ave. = Monthly Average.

H.D. = Highest Daily Reading.

APPENDIX 12—AIR POLLUTION—SMOKE DENSITY

Site	Coefficient of Haze Units per 1,000 linear feet											
	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Adelaide Metropolitan Area— Thebarton .....	Ave.	0.1	0.2	0.2	0.3	0.3	0.4	0.3	0.3	0.2	0.1	0.1
	H.D.	0.3	0.4	0.6	0.6	0.5	0.7	0.5	0.5	0.4	0.2	0.3
Fort Largs .....	Ave.	0.1	0.1	0.1	—	—	—	—	—	—	0.1	0.1
	H.D.	0.2	0.4	0.2	—	—	—	—	—	—	0.3	0.3
Woodville North .....	Ave.	0.1	0.1	0.1	0.2	0.3	0.4	0.2	0.2	0.2	0.1	0.1
	H.D.	0.2	0.3	0.4	0.5	0.5	0.6	0.5	0.5	0.4	0.3	0.2
Richmond .....	Ave.	0.1	0.2	0.2	0.3	0.2	0.4	0.3	0.3	0.2	0.2	0.1
	H.D.	0.2	0.5	0.5	0.5	0.5	0.7	0.6	0.5	0.3	0.4	0.3
Birkenhead .....	Ave.	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.1	0.1	0.1
	H.D.	0.4	0.4	0.4	0.5	0.6	0.5	0.5	0.5	0.4	0.3	0.3
Rosewater .....	Ave.	0.1	0.1	0.1	0.2	0.3	0.3	0.2	0.3	0.2	0.2	0.1
	H.D.	0.4	0.1	0.3	0.5	0.5	0.4	0.5	0.5	0.5	0.5	0.3
West Terrace.....	Ave.	0.1	0.2	0.2	0.3	0.4	0.4	0.3	0.3	0.2	0.2	0.1
	H.D.	0.3	0.3	0.4	0.6	0.6	0.6	0.5	0.5	0.4	0.3	0.3
Hindmarsh .....	Ave.	0.1	0.2	0.3	0.3	0.3	0.4	0.4	0.3	0.3	0.2	0.2
	H.D.	0.4	0.4	0.8	0.5	0.5	0.7	0.6	0.6	0.9	0.4	0.3
Country Areas— Port Augusta West .....	Ave.	0.1	less than 0.1	0.1	0.1	0.1	0.1	0.1	0.1	less than 0.1	less than 0.1	less than 0.1
	H.D.	0.1	0.1	0.2	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1
Port Augusta .....	Ave.	less than 0.1	0.1	0.1	0.1	0.1	0.1	0.1	less than 0.1	0.1	less than 0.1	less than 0.1
	H.D.	0.1	0.2	0.1	0.2	0.2	0.2	0.3	0.3	0.2	0.1	0.1
Port Pirie .....	Ave.	less than 0.1	less than 0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	less than 0.1
	H.D.	0.1	0.1	0.2	0.3	0.3	0.4	0.3	0.3	0.3	0.2	0.2

Ave. = Monthly Average. H.D. = Highest Daily Reading.

APPENDIX 13—AIR POLLUTION—DEPOSIT GAUGE RESULTS, JANUARY TO DECEMBER 1967

Location of Gauge	Tons Per Square Mile Average Rate Per Month			
	Insoluble Matter	Combustible Matter	Ash	Soluble Matter
Adelaide Metropolitan Area—				
Adelaide .....	11.6	3.1	8.3	4.7
Beverley .....	9.3	3.2	6.1	4.1
Beverley .....	9.9	3.7	2.4	7.4
Birkenhead .....	7.8	2.3	5.4	5.4
Birkenhead .....	11.3	3.9	8.1	6.3
Birkenhead .....	11.1	2.7	8.3	4.6
Birkenhead .....	15.5	2.9	12.5	4.8
Black Forest .....	6.1	3.0	3.9	3.6
Black Forest .....	12.0	4.1	7.8	7.1
Black Forest .....	8.3	3.8	4.1	5.1
Black Forest .....	7.7	2.3	5.4	3.9
Black Forest .....	6.8	2.4	4.3	3.3
Black Forest .....	5.0	1.7	4.3	3.6
Black Forest .....	7.1	2.7	3.5	3.8
Clarence Gardens .....	6.6	1.7	4.8	3.6
Clarence Park .....	7.3	1.9	5.2	2.7
Colonel Light Gardens .....	8.8	1.9	6.7	2.9
Findon .....	8.2	2.1	6.0	3.6
Flinders Park .....	7.1	1.8	5.3	3.7
Hammersmith .....	7.5	2.1	5.3	3.8
Hammersmith .....	8.4	2.0	6.2	5.2
Hammersmith .....	9.4	2.2	7.1	7.6
Hammersmith .....	8.0	3.8	4.0	7.5
Islington .....	8.9	2.6	6.1	2.9
Kent Town .....	9.0	3.3	6.4	3.7
Largs Bay .....	12.3	2.9	9.2	5.8
Linden Park .....	5.4	1.6	3.8	2.4
Mansfield Park .....	8.6	2.1	6.3	5.7
North Adelaide, Lower .....	8.8	2.8	6.1	3.4
North Adelaide .....	6.4	1.9	4.3	4.0
Port Adelaide .....	10.0	3.3	6.5	4.4
Prospect .....	7.3	2.0	5.1	2.8
Wayville .....	9.8	2.5	7.2	3.0
Woodville North .....	11.5	2.1	8.6	3.1
Port Stanvac Area—				
Christies Beach .....	9.9	2.5	7.2	4.5
Christies Beach (4 months) .....	10.1	2.8	8.1	4.9
Hallett Cove .....	5.2	1.6	3.5	3.2
Morphett Vale .....	5.8	1.9	3.9	3.3
Morphett Vale .....	6.4	1.9	4.5	3.5
Morphett Vale .....	4.9	1.5	3.2	3.2
O'Halloran Hill .....	7.0	2.5	4.4	6.2
O'Sullivan's Beach .....	7.9	2.6	5.2	5.2
Reynella .....	11.6	3.3	7.9	5.1
Reynella .....	7.7	2.2	6.3	3.9
Reynella .....	5.1	1.8	3.3	3.3
Reynella (6 months) .....	7.3	1.9	5.2	2.9
Salisbury Area—				
Parafield .....	11.5	1.9	9.5	3.7
Salisbury .....	21.7	8.6	12.3	13.3
Salisbury .....	7.5	1.9	5.7	3.0
Salisbury .....	9.9	2.4	7.4	2.9
Angaston Area—				
Angaston .....	18.5	5.0	13.4	3.7
Angaston .....	9.1	2.7	7.2	4.1
Angaston .....	20.2	4.6	15.5	5.3
Angaston .....	16.9	4.3	12.4	6.6
Angaston .....	8.0	2.6	5.4	3.2
Mount Gambier Area—				
Mount Gambier .....	8.4	3.8	4.5	5.4
Mount Gambier .....	16.2	5.8	10.4	11.6
Mount Gambier .....	10.6	4.6	5.0	10.0
Mount Gambier .....	21.7	6.8	14.7	19.5
Mount Gambier .....	14.0	7.1	8.4	7.1

APPENDIX 14—CHILDREN EXAMINED IN EDUCATION DEPARTMENT SCHOOLS

	1965	1966	1967		Total
			Metropolitan	Country	
Schools visited .....	409	367	153	129	282
Children examined .....	80,156	89,040	29,083	11,229	40,312
Defects found—					
Vision (excluding spectacles) .....	5,974	6,731	3,593	1,220	4,813
Wearing spectacles .....	5,857	6,473	3,794	1,101	4,895
Hearing .....	2,281	2,848	2,054	635	2,689
Nose and throat .....	1,030	1,097	629	126	755
Heart .....	585	937	468	106	574
Skin .....	848	1,479	731	292	1,023
Lungs .....	336	252	137	51	188
Epilepsy .....	89	89	75	23	98
Allergies .....	3,386	3,521	2,845	1,038	3,883
Others including postural defects, colour blindness, enuresis .....	8,913	13,883	6,167	2,381	8,548
Teeth—seen by medical officers only and excluding children under dental treatment .....	13,097	15,471	6,324	3,664	9,988
Total defects .....	45,677	52,781	26,817	10,637	37,454

APPENDIX 15—DEFECTS PER 10,000 CHILDREN EXAMINED

Year	Vision	Hearing	Nose and Throat	Heart	Epilepsy	Allergies	Teeth*
1961 .....	571	282	119	51	11	475	1,912
1962 .....	615	211	113	52	11	398	1,687
1963 .....	730	306	140	47	13	537	1,500
1964 .....	817	308	121	68	15	496	1,093
1965 .....	723	284	129	73	11	423	1,637
1966 .....	757	320	123	105	10	395	1,738
1967 .....	1,194	667	187	142	24	963	2,478

\*This figure does not represent the total decay rate. These were children examined by medical officers and found to have sufficient decay present to warrant the issuing of a dental notice. Children already under private dental supervision and children examined by departmental dental officers are not included.

APPENDIX 16—INFECTIONS IN SCHOOL CHILDREN—NUMBERS OF COMMUNICABLE DISEASES REPORTED TO TEACHERS IN STATE SCHOOLS

Year	Diphtheria	Scarlet Fever	Measles	Rubella	Whooping Cough	Chicken Pox	Mumps	Polio-myelitis	Infective Hepatitis	Other Conditions
COMMUNICABLE DISEASES										
1963 .....	—	172	1,444	826	218	2,607	4,750	—	59	99
1964 .....	1	200	2,488	985	54	1,997	1,618	—	85	85
1965 .....	2	122	1,283	639	27	1,737	892	—	126	118
1966 .....	—	113	1,391	360	108	1,566	1,495	—	361	88
1967 .....	—	53	2,162	1,398	39	1,619	2,537	—	448	115
COMMUNICABLE DISEASES PER 10,000 CHILDREN ENROLLED										
1963 .....	—	9.1	73.9	43.5	11.5	137.2	250.0	—	3.1	5.2
1964 .....	—	10.0	124.8	49.2	2.7	99.8	80.9	—	4.3	4.3
1965 .....	—	5.8	61.0	30.4	1.3	82.7	42.5	—	6.0	5.6
1966 .....	—	5.1	63.2	16.4	4.9	71.2	67.9	—	16.4	4.0
1967 .....	—	2.4	99.6	64.4	1.8	75.0	117.0	—	20.5	5.3

APPENDIX 17—ATTENDANCES AT THE DEAFNESS GUIDANCE CLINIC

	New Cases			Retests		
	Male	Female	Total	Male	Female	Total
Pre-school—						
Metropolitan .....	39	20	59	7	4	11
Country .....	8	1	9	1	1	2
Primary School—						
Metropolitan .....	567	389	956	597	416	1,013
Country .....	86	82	168	82	58	140
Secondary School—						
Metropolitan .....	119	39	158	173	87	260
Country .....	35	13	48	25	18	43
Government Departments and others .....	16	9	25	18	4	22
Total .....	870	553	1,423	903	588	1,491

APPENDIX 18—DISPOSAL AFTER ATTENDANCE AT THE DEAFNESS GUIDANCE CLINIC

	New Cases	Retests
Referred to Family Doctor.....	657	387
Referred to Specialists or Hospitals.....	42	73
Returning for further testing.....	448	820
Discharged .....	276	211

APPENDIX 19—SALK POLIOMYELITIS VACCINE INJECTIONS GIVEN IN THE YEAR ENDED 31ST DECEMBER 1967  
(In applicants' years of birth and number of injections received)

Year of Birth	Department of Public Health				Local Boards of Health				Hospitals and other Authorities				Private Doctors				Total			
	Injections				Injections				Injections				Injections				1st	2nd	3rd	4 +
	1st	2nd	3rd	4 +	1st	2nd	3rd	4 +	1st	2nd	3rd	4 +	1st	2nd	3rd	4 +				
1967 .....	1	2	—	—	29	24	—	—	17	7	—	—	888	665	14	—	935	698	14	—
1966 .....	333	319	54	4	4,065	3,715	1,205	4	111	103	37	—	3,507	3,775	2,712	26	8,016	7,912	4,008	34
1965 .....	57	99	340	67	471	655	3,284	630	16	26	96	18	325	409	2,242	1,394	869	1,189	5,962	2,109
1964 .....	22	29	80	263	174	213	614	2,505	7	6	21	73	134	153	365	1,695	337	401	1,080	4,536
1963 .....	21	26	63	122	131	125	260	874	3	3	7	25	91	102	182	530	246	256	512	1,551
1962 .....	13	15	46	82	92	87	206	554	2	3	9	24	74	71	123	307	181	176	384	967
1961 .....	9	11	39	46	113	117	132	365	8	2	4	17	51	46	93	184	181	176	268	612
1960 .....	9	14	27	34	64	66	125	253	5	1	7	14	32	43	62	137	110	124	221	438
1959 .....	8	9	27	38	36	47	107	236	3	3	6	6	20	21	50	128	67	80	190	408
1958 .....	3	5	19	38	29	36	80	181	—	—	4	9	27	24	39	84	59	65	142	312
1957 .....	6	10	18	36	39	42	80	187	—	5	4	6	11	15	17	76	56	72	119	305
1956 .....	6	5	15	25	35	43	75	159	1	—	3	11	11	13	23	51	53	61	116	246
1955 .....	4	7	14	24	26	35	54	102	—	—	4	3	12	16	16	51	42	58	88	180
1954 .....	5	6	7	34	16	28	30	64	—	—	3	—	9	9	22	35	30	43	62	133
1953 .....	7	5	10	30	15	22	30	52	1	—	2	3	6	7	13	49	29	34	55	134
1952 .....	8	6	7	27	8	13	33	56	—	1	—	3	10	11	10	49	26	31	50	135
1951 .....	4	1	5	33	2	5	32	43	1	—	1	8	8	8	5	23	15	14	43	107
1950 .....	10	7	8	43	3	3	12	27	3	3	2	50	1	3	4	16	17	16	26	136
1949 .....	2	10	6	42	3	6	8	19	7	5	8	231	4	6	3	21	16	27	25	313
1948 .....	9	12	12	41	4	3	4	19	6	7	9	113	4	4	9	20	23	26	34	193
1947 .....	12	24	16	44	4	6	6	22	6	5	15	37	3	5	9	24	25	40	46	127
1946 .....	7	16	16	51	2	3	6	29	6	2	18	24	5	4	8	29	20	25	48	133
1945 .....	9	19	17	45	4	8	3	22	2	3	7	17	9	8	8	28	24	38	35	122
1944 .....	12	19	15	33	4	6	8	38	2	2	9	20	13	14	15	47	31	41	47	138
1943 .....	12	26	22	43	7	8	10	46	—	3	5	13	5	4	13	55	24	41	50	157
1942 .....	12	18	19	31	18	15	19	66	3	5	4	13	9	10	19	47	42	48	61	157
1941 .....	17	28	37	34	31	24	27	72	4	3	5	11	23	27	48	69	75	82	117	186
1940 .....	11	38	40	30	30	25	41	82	—	—	10	13	20	26	45	75	61	89	136	200
1939 .....	15	32	30	28	27	30	39	77	4	5	6	14	33	28	35	69	79	95	110	188
1938 .....	19	30	43	31	17	24	38	66	1	3	5	12	15	22	32	79	52	79	118	188
1937 .....	20	33	44	34	10	16	39	74	2	2	7	8	19	20	31	67	51	71	121	183
1936 .....	8	30	19	26	17	12	39	65	3	4	4	5	15	13	29	60	43	59	91	156
1935 .....	10	37	40	26	16	17	21	61	3	1	5	8	17	18	15	51	46	73	81	146
1934 .....	12	34	34	28	14	16	33	54	1	1	5	11	9	6	18	42	36	57	90	135
1933 .....	8	21	28	27	11	9	16	50	1	4	—	3	8	7	17	33	28	41	61	113
1932 .....	7	24	31	21	4	8	22	54	1	2	8	13	7	6	12	32	19	40	73	120
1931 .....	7	17	17	17	9	15	20	48	1	—	3	4	—	10	12	36	17	42	52	105
1930 .....	14	34	24	27	6	7	21	54	3	1	4	8	8	8	11	26	31	50	60	115
1929 .....	10	40	34	28	7	9	11	37	—	1	1	3	6	6	9	34	23	56	55	102
1928 .....	9	24	32	17	7	11	17	40	3	1	2	6	7	11	14	35	26	47	65	98
1927 .....	5	35	44	19	5	6	16	43	2	1	2	9	12	9	10	28	24	51	72	99
1926 .....	11	49	46	23	6	7	16	28	—	—	5	7	5	6	5	27	22	62	72	85
1925 .....	12	36	33	30	3	1	9	35	1	—	1	7	2	4	6	20	18	41	49	92
1924 .....	5	34	40	19	—	2	10	34	2	2	3	9	5	6	7	23	12	44	60	85
1923 .....	6	23	26	14	2	1	7	20	—	—	1	5	6	6	8	20	14	30	42	59
1922 .....	11	36	37	20	6	6	7	20	1	—	2	5	2	1	4	14	20	43	50	59
1921 .....	10	36	33	22	6	6	4	18	1	2	1	1	1	1	3	22	18	45	41	63
1920 .....	12	40	36	21	2	1	5	15	3	2	2	7	2	2	3	11	19	45	46	54
1919 .....	9	34	27	7	—	—	11	19	1	1	—	5	4	5	4	13	14	40	42	44
1918 + .....	90	534	510	186	34	21	52	146	3	8	17	37	32	32	50	156	159	595	629	525
Total.....	939	1,999	2,187	2,011	5,664	5,605	6,944	7,765	251	239	384	949	5,527	5,726	6,504	6,158	12,381	13,569	16,019	16,883

APPENDIX 20—SABIN ORAL POLIOMYELITIS VACCINE DOSES GIVEN IN THE YEAR ENDED 31ST DECEMBER 1967  
(In applicants' years of birth and number of doses received.)

Year of Birth	Department of Public Health			Local Boards of Health			Hospitals and other Authorities			Private Doctors			Total		
	Doses			Doses			Doses			Doses			Doses		
	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
1967.....	702	353	109	6,527	3,468	881	88	28	6	179	87	21	7,496	3,936	1,017
1966.....	842	507	234	6,945	4,455	1,807	87	38	15	138	79	21	8,012	5,079	2,077
1965.....	602	246	58	3,289	1,447	364	55	12	2	65	21	2	4,011	1,726	426
1964.....	355	169	28	1,724	812	116	35	12	—	24	8	1	2,138	1,001	145
1963.....	244	94	17	950	442	94	18	4	1	14	4	—	1,226	544	112
1962.....	172	74	12	665	323	110	19	5	1	17	3	1	873	405	124
1961.....	137	50	10	500	284	57	4	1	—	7	5	1	648	340	68
1960.....	132	49	16	399	202	48	10	1	—	5	4	1	546	256	65
1959.....	110	35	3	334	174	32	4	1	—	5	3	1	453	213	36
1958.....	119	49	7	254	144	35	5	1	1	4	2	—	382	196	43
1957.....	96	48	12	264	156	29	3	2	—	3	1	—	366	207	41
1956.....	82	39	12	232	121	14	2	1	—	1	—	—	317	161	26
1955.....	71	26	5	177	80	10	1	—	—	—	—	—	249	106	15
1954.....	66	31	7	128	68	7	3	1	—	1	—	—	198	100	14
1953.....	69	39	9	91	43	6	1	—	—	1	—	—	162	82	15
1952.....	67	33	2	66	33	3	4	—	—	1	—	—	138	66	5
1951.....	41	18	3	53	23	5	1	—	—	—	—	—	95	41	8
1950.....	48	19	2	43	18	2	23	12	—	—	—	—	114	49	4
1949.....	39	10	—	31	13	3	198	128	2	1	—	—	269	151	5
1948.....	27	8	1	44	16	2	127	74	11	—	—	1	198	98	15
1947.....	31	13	1	57	21	5	67	28	10	1	1	1	156	63	17
1946.....	60	16	2	76	34	7	46	27	—	—	—	—	182	77	14
1945.....	51	21	2	94	41	10	29	12	2	4	3	2	178	77	16
1944.....	61	25	2	115	52	10	25	5	—	—	—	—	201	82	12
1943.....	60	22	2	137	70	14	14	5	2	2	1	1	213	98	19
1942.....	64	28	4	165	74	9	19	13	6	4	1	1	252	116	20
1941.....	85	29	6	220	118	25	20	7	2	6	3	2	331	157	35
1940.....	70	27	5	200	91	17	14	8	3	7	2	—	291	128	25
1939.....	77	28	5	178	87	18	18	6	1	5	4	—	278	125	24
1938.....	75	33	14	182	78	28	14	4	2	6	5	1	277	120	45
1937.....	62	20	5	159	64	13	20	10	3	3	1	—	244	95	21
1936.....	69	31	11	145	64	16	10	9	5	4	3	—	228	107	32
1935.....	55	29	12	117	54	11	7	3	—	1	1	—	180	87	23
1934.....	51	17	1	147	66	12	9	3	2	—	—	—	207	86	15
1933.....	56	19	9	102	49	17	8	4	3	2	—	—	168	72	29
1932.....	42	16	6	84	41	3	8	2	1	1	—	—	135	59	10
1931.....	45	23	2	81	33	9	4	3	1	1	—	—	131	59	12
1930.....	45	21	5	93	38	4	12	5	3	—	—	—	150	64	12
1929.....	50	16	4	73	36	6	9	4	3	—	—	—	132	56	13
1928.....	48	13	3	72	32	8	6	3	1	—	—	—	126	48	12
1927.....	37	19	5	47	24	7	3	3	1	—	1	—	87	47	13
1926.....	33	20	7	58	28	5	6	4	3	1	—	—	98	52	15
1925.....	32	16	3	50	18	3	4	4	1	—	—	—	86	38	7
1924.....	42	19	9	42	17	4	5	3	2	2	1	—	91	40	15
1923.....	36	19	6	31	13	2	6	3	—	1	1	—	74	36	8
1922.....	23	14	1	33	10	4	3	3	1	2	1	1	61	28	7
1921.....	26	9	2	31	15	3	5	3	1	—	—	—	62	27	6
1920.....	43	20	4	26	13	5	3	3	—	—	—	—	72	36	9
1919.....	20	9	—	19	5	1	1	1	—	—	—	—	40	15	1
1918+.....	231	121	19	220	114	32	18	7	—	3	2	—	472	244	51
Total ...	5,701	2,610	704	25,770	13,722	3,933	1,101	516	103	522	248	59	33,094	17,096	4,799

APPENDIX 21—USAGE AND WASTAGE OF POLIOMYELITIS VACCINE IN SOUTH AUSTRALIA IN 1967 BY VARIOUS AGENCIES

Agency	Department of Public Health		Local Boards of Health		Special Groups		Medical Practitioners				Total	
							Metropolitan		Country			
Vaccine	Salk	Sabin	Salk	Sabin	Salk	Sabin	Salk	Sabin	Salk	Sabin	Salk	Sabin
Number of doses issued . . . .	7,272	11,720	28,304	51,970	1,974	4,660	21,316	663	6,862	520	65,728	69,533
Number of doses used . . . . .	7,136	9,015	25,978	43,425	1,823	1,720	18,551	513	5,364	316	58,852	54,989
Number of doses wasted or unaccounted . . . . .	136	2,705	2,326	8,545	151	2,940	2,765	150	1,498	204	6,876	14,544
Wastage rate . . . . .	Per Cent 1.87	Per Cent 23.08	Per Cent 8.21	Per Cent 16.44	Per Cent 7.64	Per Cent 63.09	Per Cent 12.97	Per Cent 22.62	Per Cent 21.83	Per Cent 39.23	Per Cent 10.46	Per Cent 20.91

APPENDIX 22—POLIOMYELITIS INJECTIONS AND DOSES GIVEN BY LOCAL BOARDS OF HEALTH

	1967		1966
	Sabin	Salk	Salk
METROPOLITAN LOCAL BOARDS OF HEALTH			
Adelaide .....	251	143	357
Brighton .....	323	183	523
Colonel Light Gardens .....	50	—	—
E.T.C.B. ....	2,517	1,321	3,099
Enfield .....	2,599	1,428	3,242
Glenelg .....	282	112	364
Henley and Grange .....	356	257	668
Hindmarsh .....	273	253	552
Marion .....	1,995	1,334	3,156
Mitcham .....	720	240	873
Port Adelaide .....	938	983	1,666
Prospect .....	521	299	732
Thebarton .....	609	281	712
Unley .....	829	404	1,057
Walkerville .....	87	45	122
West Torrens .....	568	987	1,286
Woodville .....	3,167	2,342	6,083
Metropolitan Total .....	16,085	10,612	24,492
COUNTRY LOCAL BOARDS OF HEALTH			
Angaston .....	180	165	389
Balaklava .....	221	73	281
Barmera .....	193	91	224
Barossa .....	104	—	34
Berri .....	189	—	174
Blyth .....	14	27	75
Burra .....	103	83	211
Clare .....	—	22	125
Cleve .....	92	219	411
Coonalpyn Downs .....	256	122	264
Crystal Brook .....	40	65	155
Dudley .....	26	19	38
East Torrens .....	86	93	184
Elliston .....	171	81	84
Encounter Bay .....	—	100	106
Eudunda .....	144	33	154
Franklin Harbour .....	105	37	82
Freeling .....	47	48	61
Gawler .....	130	119	233
Gladstone .....	320	111	116
Gumeracha .....	114	95	—
Hallett .....	114	—	150
Hawker .....	—	27	96
Jamestown .....	159	—	134
Kadina .....	266	122	284
Kapunda .....	128	61	130
Karoonda .....	—	100	134
Kimba .....	101	103	194
Kingscote .....	170	157	366
Lacepede .....	75	61	153
Lameroo .....	229	116	277
Laura .....	53	29	65
Le Hunte .....	550	154	200
Lincoln .....	184	119	251
Loxton .....	446	84	345
Lucindale .....	34	40	143
Mallala .....	129	87	133
Mannum .....	261	119	298
Marne .....	63	32	67
Meadows .....	228	26	126
Meningie .....	613	214	446
Millicent .....	374	331	996
Minlaton .....	46	—	—
Moonta .....	46	55	99
Morgan .....	27	26	64
Mount Barker .....	59	—	41
Mount Gambier .....	1,404	967	2,057
Mount Pleasant .....	107	56	129
Mudla Wirra .....	—	7	27
Munno Para .....	1,451	701	988
Murat Bay .....	214	117	248
Murray Bridge .....	712	376	887
Naracoorte .....	519	293	700
Noarlunga .....	906	571	1,252
Onkaparinga .....	289	150	407
Orroroo .....	71	67	141
Owen .....	73	43	119
Peake .....	—	37	96
Penola .....	138	292	433
Peterborough .....	198	171	256
Pinnaroo .....	132	96	183
Port Augusta .....	962	517	1,131
Port Broughton .....	—	18	106
Port Elliot .....	44	20	69
Port Germein .....	15	30	85
Port Lincoln .....	979	387	1,101
Port McDonnell .....	—	62	—
Port Pirie .....	977	710	1,315
Port Wakefield .....	—	22	76

APPENDIX 22—POLIOMYELITIS INJECTIONS AND DOSES GIVEN BY LOCAL BOARDS OF HEALTH—*continued*

	1967		1966
	Sabin	Salk	Salk
COUNTRY LOCAL BOARDS OF HEALTH— <i>continued</i>			
Quorn .....	67	31	76
Red Hill .....	65	13	66
Renmark .....	357	322	660
Riverton .....	159	40	106
Robe .....	58	52	36
Robertstown .....	120	—	108
Saddleworth .....	128	51	88
Salisbury (Including Elizabeth) .....	5,294	3,050	6,008
Sedan .....	20	40	126
Snowtown .....	41	26	43
Stirling .....	178	76	205
Strathalbyn .....	159	—	37
Streaky Bay .....	—	130	164
Tanunda .....	86	62	209
Tatiara .....	366	276	659
Tea Tree Gully .....	1,489	620	1,350
Truro .....	—	25	—
Tumby Bay .....	302	65	197
Upper Wakefield .....	69	15	57
Victor Harbour .....	159	—	151
Waikerie .....	162	40	205
Wallaroo .....	35	55	108
Warooka .....	23	27	31
Whyalla .....	1,056	433	1,310
Willunga .....	76	44	90
Wilmington .....	8	24	45
Yankalilla .....	168	80	155
Yorke Peninsula .....	466	290	437
Yorketown .....	148	103	234
Country Total .....	27,340	15,366	33,360
Metropolitan and Country Total .....	43,425	25,978	57,852

APPENDIX 23—NOTIFICATIONS OF VARIOUS FORMS OF TUBERCULOSIS FOR THE YEARS 1963 TO 1967

Year	Male					Female					Persons					Total		Morbidity Rates (New notifications per 100,000 population.)		
	Primary Infection	Pleural Effusion	Pulmonary Disease	Non-Pulmonary Disease	Reactivates	Primary Infection	Pleural Effusion	Pulmonary Disease	Non-Pulmonary Disease	Reactivates	Primary Infection	Pleural Effusion	Pulmonary Disease	Non-Pulmonary Disease	Reactivates	Total New Notifications	Grand Total	Pulmonary Disease	Non-Pulmonary Disease	Total
1963 .....	10	6	108	14	4	4	5	56	17	4	14	11	164	31	8	220	228	20.5	3.1	23.6
1964 .....	2	2	105	16	2	0	1	37	14	4	2	3	142	30	6	177	183	14.1	2.8	16.9
1965 .....	0	2	90	21	6	0	0	34	9	0	0	2	124	30	6	156	162	12.0	2.7	14.7
1966 .....	6	2	64	17	10	4	0	30	8	4	10	2	94	25	14	131	145	9.8	2.3	12.1
1967 .....	4	0	71	9	11	3	1	41	12	3	7	1	112	21	14	141	155	11.0	2.1	12.9

APPENDIX 24—NOTIFICATION OF TUBERCULOSIS IN MIGRANTS  
COMPARATIVE PERCENTAGE BETWEEN BRITISH AND NON-BRITISH

Period of Residence in Australia		1963	1964	1965	1966	1967
		Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
British—						
Within 1 year		2	2	4.5	6.6	6.8
From 1-5 years		10	9	4.5	13.4	20.5
From 5-10 years		2	5	—	3.3	—
Over 10 years		15	15	14.0	20.0	18.2
Non-British—						
Within 1 year		4	4	9.0	—	13.6
From 1-5 years		15	9	11.0	10.0	9.1
From 5-10 years		21	18	18.0	16.0	6.8
Over 10 years		30	38	39.0	30.0	25.0

COMPARATIVE FIGURES FOR ASSISTED AND NON-ASSISTED MIGRANTS

Year	Assisted		Non-Assisted		Percentage of Total Notifications
	No.	Per Cent	No.	Per Cent	Per Cent
1963	38	73	14	27	22
1964	41	75	14	25	31
1965	29	66	15	34	28
1966	26	87	4	13	23
1967	26	59	18	41	31

APPENDIX 25—TUBERCULOSIS NOTIFICATIONS BY AGE DISTRIBUTION

Age Group	1963	1964	1965	1966	1967
	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
0-4	7.2	2.8	2.6	6.9	4.5
5-9	3.3	1.1	1.2	1.5	1.4
10-14	1.4	1.1	0.6	—	—
15-19	5.3	3.3	3.9	3.8	2.1
20-24	8.6	5.7	5.1	6.9	5.0
25-29	3.3	10.2	4.5	5.3	9.2
30-34	9.6	7.4	7.7	4.6	7.1
35-39	8.1	6.2	6.4	8.4	8.5
40-44	10.1	11.3	14.1	13.7	5.7
45-49	10.1	8.5	10.9	6.9	5.7
50-54	5.3	13.0	10.3	6.9	5.0
55-59	8.1	7.3	7.7	6.9	9.2
60-64	4.8	8.5	7.1	7.6	10.0
65-69	4.3	4.0	3.9	3.1	5.0
70-74	3.8	4.5	5.8	7.6	9.2
75 and over	6.7	5.1	7.7	7.6	12.8

APPENDIX 26—MASS X-RAY SURVEY

	1963		1964		1965		1966		1967	
	Metro-politan	Country	Metro-politan	Country	Metro-politan	Country	Metro-politan	Country	Metro-politan	Country
Totals X-rayed Mass Surveys	60,200	55,843	96,281	45,310	123,466	22,314	44,065	38,277	78,033	—
Active per thousand	0.2	0.4	.27	.18	.22	.36	.14	.10	.13	—
Inactive per thousand	22.0	19.2	8.8	9.35	4.6	4.75	10.0	10.7	5.5	—
Number of new pulmonary cases for year	205		147		127		106		120	
Number of cases Mass Surveys	52		40		44		19		18	
Percentage of new pulmonary cases Mass Surveys	25.0		27.0		34.6		18.0		15.0	

APPENDIX 27—WORK OF CITY X-RAY UNIT

	1963			1964			1965			1966			1967		
	Number X-rayed	Num- ber active cases	Active cases per thou- sand	Number X-rayed	Num- ber active cases	Active cases per thou- sand	Number X-rayed	Num- ber active cases	Active cases per thou- sand	Number X-rayed	Num- ber active cases	Active cases per thou- sand	Number X-rayed	Num- ber active cases	Active cases per thou- sand
Contacts .....	606	—	—	1,971	2	1.1	1,661	—	—	1,846	4	2.2	1,863	2	1.0
Doctors Referrals .....	5,376	16	3.0	6,095	6	1.0	5,642	7	1.2	5,592	9	1.6	5,662	7	1.2
Migrants (New arrivals) .....	5,639	1	0.2	8,863	2	0.2	10,594	3	0.3	9,534	2	0.2	6,451	3	0.4
Pensioners .....	1,710	—	—	1,763	—	—	1,026	1	1.0	856	—	—	1,107	—	—
Volunteers .....	5,257	4	0.8	5,755	5	0.9	5,506	3	0.5	5,534	2	0.4	6,784	3	0.4
University Students .....	1,257	—	—	2,758	1	0.4	2,125	—	—	1,704	—	—	1,611	—	—
Positive Mantoux (Schools) .....	1,608	2	1.2	1,391	2	1.4	1,867	1	0.5	870	—	—	844	1	1.1
Inactive Previous Surveys (Scar) .....	1,126	4	3.5	2,828	7	2.5	1,765	8	4.5	1,986	7	3.6	1,241	4	3.2

APPENDIX 28—PERCENTAGE OF NATURAL POSITIVE REACTORS TO TUBERCULIN TESTS

Age Group	1963	1964	1965	1966	1967
	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
0-4 .....	3.2	1.6	3.8	1.8	1.0
5-9 .....	1.3	0.8	1.5	0.7	0.8
10-14 .....	4.0	3.1	3.9	2.3	1.8
15-19 .....	6.9	10.1	14.7	10.6	7.2
20-24 .....	10.3	26.5	35.2	27.0	26.7
25-29 .....	29.3	41.3	44.4	43.0	26.7
30-34 .....	38.6	50.0	58.9	43.0	46.4
25-39 .....	51.4	56.8	56.2	54.0	51.0
40-44 .....	51.6	60.0	75.2	59.0	56.0
45-49 .....	52.8	68.0	66.6	62.0	63.0
50+ .....	—	61.0	60.4	64.0	55.0

APPENDIX 29—ANALYSIS OF DISEASES DISCOVERED BY 70 mm. RADIOGRAPHY

	Diagnosis after investigation	Diagnosis from 70 mm. film only	Total
1a Active tuberculous cases .....	40	—	40
1b Tuberculous cases requiring chemotherapy .....	23	—	23
2 Carcinoma .....	37	13	50
3 Non-malignant neoplasms .....	1	4	5
4 Lymphadenopathies .....	4	2	6
5 Sarcoid .....	4	5	9
6 Congenital Cardiac .....	—	36	36
7 Acquired Cardiac .....	2	864	866
8 Pneumoconiosis .....	5	31	36
9 Pneumoconiosis with P.M.F. ....	2	—	2
10 Inactive Primary Complexes .....	30	1,737	1,767
11 Inactive Post Primary Disease .....	59	1,295	1,354
12 Interstitial Pul. Fibrosis .....	5	8	13
13 Hiatus Hernia .....	1	33	34
14 Abnormalities of Diaphragm .....	—	149	149
15 Chronic Bronchitis, Asthma, Emphysema .....	24	419	443
16 Unilateral Emphysema .....	—	6	6
17 Bronchiectasis .....	2	60	62
18 Inflammatory Lesions .....	42	307	349
19 Others .....	56	435	491
20 Spontaneous Pneumothorax .....	—	7	7
21 Calcified Pleura .....	1	97	98
22 Pleural Effusion .....	1	10	11
23 Expansion of Ribs .....	3	111	114
24 Odd areas of collapse .....	—	104	104
25 Cysts .....	2	5	7

APPENDIX 30—NOTIFICATIONS OF TUBERCULOSIS FOR YEAR ENDED 31ST DECEMBER, 1967  
NEW ACTIVE AND PROBABLY ACTIVE CASES SHOWING AGE, SEX AND STAGE OF DISEASE

Age Group	MALES					FEMALES					PERSONS					Per Cent of each Age Group
	Primary	Pleurisy with Effusion	Pulmonary			Non- Pul- monary	Primary	Pleurisy with Effusion	Pulmonary			Non- Pul- monary	Total Persons			
			Min.	Mod. Adv.	Adv.				Min.	Mod. Adv.	Adv.					
0-4 .....	2	—	—	—	—	—	3	—	—	—	—	1	6	4.35		
5-9 .....	2	—	—	—	—	—	2	—	—	—	—	—	2	1.42		
10-14 .....	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
15-19 .....	—	—	—	—	—	—	—	—	1	1	—	—	3	2.13		
20-24 .....	—	—	2	3	2	—	—	—	2	2	—	—	7	4.97		
25-29 .....	—	—	2	1	1	1	—	—	2	2	2	2	13	9.22		
30-34 .....	—	—	3	1	1	2	—	—	1	1	1	1	10	7.09		
35-39 .....	—	—	2	1	1	—	—	—	2	2	3	5	12	8.51		
40-44 .....	—	—	2	1	2	2	—	—	—	2	2	1	8	5.67		
45-49 .....	—	—	1	1	2	—	—	1	1	2	2	2	8	5.67		
50-54 .....	—	—	1	3	—	—	—	—	1	2	3	—	7	4.97		
55-59 .....	—	—	4	2	4	1	—	—	5	3	4	1	13	9.22		
60-64 .....	—	—	7	3	—	—	—	—	7	4	—	2	14	9.93		
65-69 .....	—	—	1	1	—	—	—	—	1	4	1	1	7	4.97		
70-74 .....	—	—	3	1	2	1	—	—	4	2	3	4	13	9.22		
75 and over .....	—	—	3	5	3	—	—	—	6	6	5	1	18	12.76		
N/S .....	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Total .....	4	—	31	23	17	9	3	1	15	17	9	12	141	100.00		

APPENDIX 31—RE-ACTIVATED CASES OF TUBERCULOSIS FOR YEAR ENDED 31ST DECEMBER, 1967  
SHOWING AGE, SEX AND STAGE OF DISEASE

AGE GROUP	MALES				FEMALES				PERSONS				
	Min.	Mod. Adv.	Adv.	Non-Pul-monary	Min.	Mod. Adv.	Adv.	Non-Pul-monary	Min.	Mod. Adv.	Adv.	Non-Pul-monary	Total Persons
0-4 .....	—	—	—	—	—	—	—	—	—	—	—	—	—
5-9 .....	—	—	—	—	—	—	—	—	—	—	—	—	—
10-14 .....	—	—	—	—	—	—	—	—	—	—	—	—	—
15-19 .....	—	—	—	—	—	—	—	—	—	—	—	—	—
20-24 .....	—	—	—	—	—	—	—	—	—	—	—	—	—
25-29 .....	—	—	—	—	—	—	—	—	—	—	—	—	—
30-34 .....	—	—	—	—	—	—	—	—	—	—	—	—	—
35-39 .....	—	1	—	—	—	—	—	—	—	1	—	—	1
40-44 .....	—	—	1	2	—	—	—	—	—	—	1	2	3
45-49 .....	—	1	—	—	—	—	—	—	—	1	—	—	1
50-54 .....	—	1	—	—	1	1	—	—	1	2	—	—	3
55-59 .....	—	1	—	—	—	—	—	—	—	1	—	—	1
60-64 .....	1	1	—	—	—	—	—	—	1	1	—	—	2
65-69 .....	—	—	1	—	—	—	—	—	—	—	1	—	1
70-74 .....	1	—	—	—	1	—	—	—	2	—	—	—	2
75 and over .....	—	—	—	—	—	—	—	—	—	—	—	—	—
N/S .....	—	—	—	—	—	—	—	—	—	—	—	—	—
Total .....	2	5	2	2	2	1	—	—	4	6	2	2	14

APPENDIX 32—DEATHS FROM TUBERCULOSIS (ALL FORMS) FOR THE YEAR ENDING 31ST DECEMBER, 1967

Age at Death	Male	Female	Total
*40-44 .....	1	—	1
45-49 .....	—	—	—
50-54 .....	—	—	—
55-59 .....	2	—	2
60-64 .....	2	—	2
65-69 .....	3	—	3
70-74 .....	3	—	3
75-79 .....	1	—	1
80-84 .....	3	—	3
85-89 .....	1	—	1
	16	—	16

\*This person died of non-pulmonary tuberculosis, the remainder are pulmonary deaths.

APPENDIX 33—NOTIFICATION OF TUBERCULOSIS IN LOCAL BOARD OF HEALTH AREAS FOR THE YEAR ENDING 31ST DECEMBER, 1967

PULMONARY TUBERCULOSIS

METROPOLITAN		COUNTRY	
LOCAL BOARD AREA	Notifications	LOCAL BOARD AREA	Notifications
Adelaide .....	3	Berri .....	1
Brighton .....	2	Kimba .....	1
Colonel Light Gardens .....	1	Mt. Gambier District .....	2
East Torrens County Board .....	12	Mt. Gambier Town .....	3
Elizabeth .....	1	Murat Bay .....	1
Enfield .....	15	Murray Bridge .....	2
Glenelg .....	4	Naracoorte Town .....	1
Henley and Grange .....	5	Port Augusta .....	3
Hindmarsh .....	3	Port Lincoln .....	3
Marion .....	7	Port Pirie .....	1
Mitcham .....	5	Renmark .....	1
Port Adelaide .....	9	Tatiara .....	1
Prospect .....	3	Tumby Bay .....	1
Salisbury .....	7	Whyalla .....	1
Stirling .....	1	Willunga .....	1
Tea Tree Gully .....	1	Yalata (O.D.) .....	1
Thebarton .....	2	Yorke Peninsula .....	1
Unley .....	2		
West Torrens .....	5		25
Woodville .....	7		
	95		

NON-PULMONARY TUBERCULOSIS

LOCAL BOARD AREA	Notifications	LOCAL BOARD AREA	Notifications
Brighton .....	2	Meadows .....	1
Enfield .....	3	Penola .....	1
Elizabeth .....	1	Port Pirie .....	1
East Torrens County Board .....	2	Tatiara .....	1
Henley and Grange .....	2	Quorn .....	1
Marion .....	2		
Mitcham .....	1		5
Stirling .....	1		
Woodville .....	2		
	16		

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION  
PUBLISHED WEEKLY  
CHICAGO, ILL., U.S.A.

1913

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